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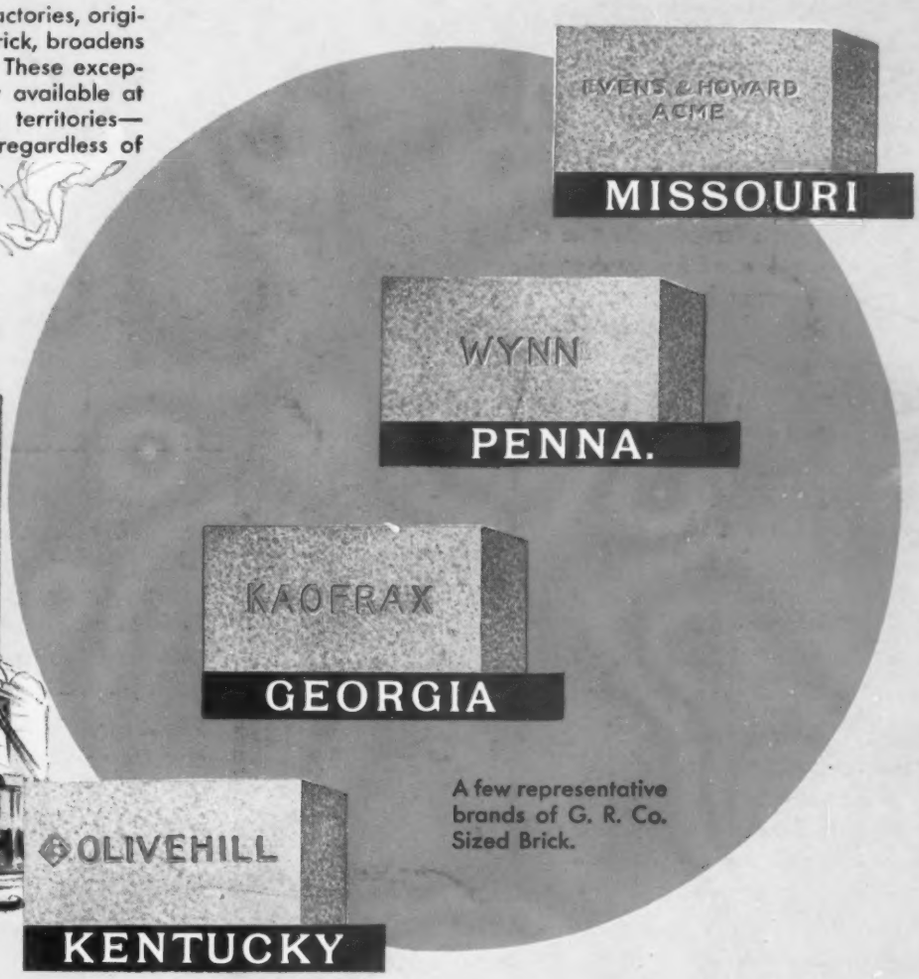

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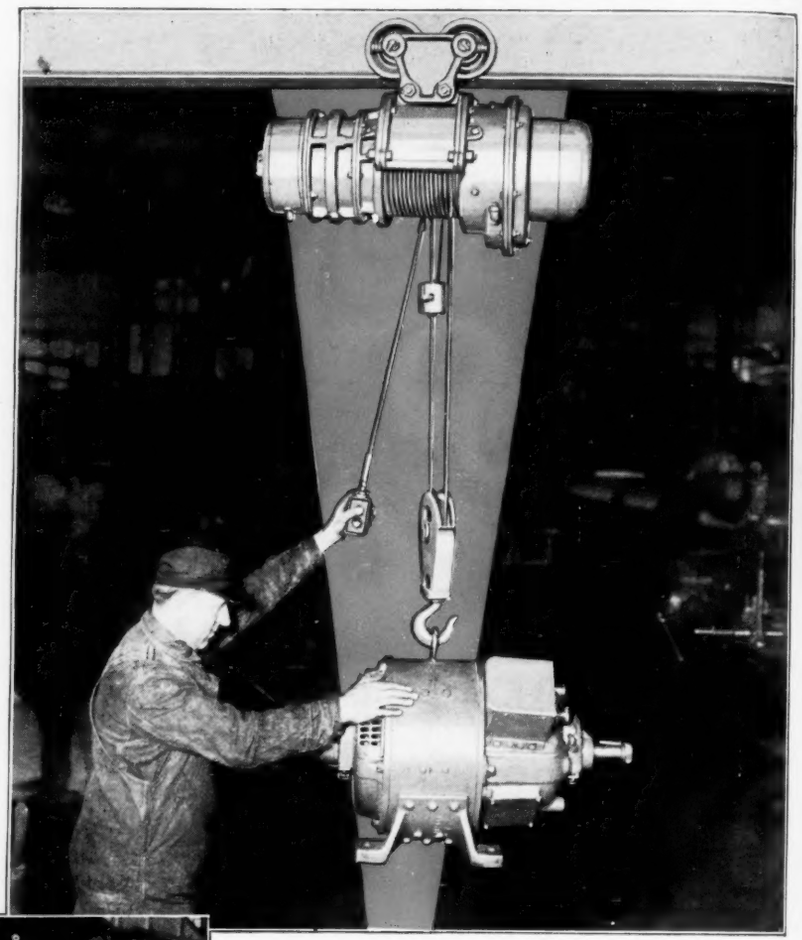

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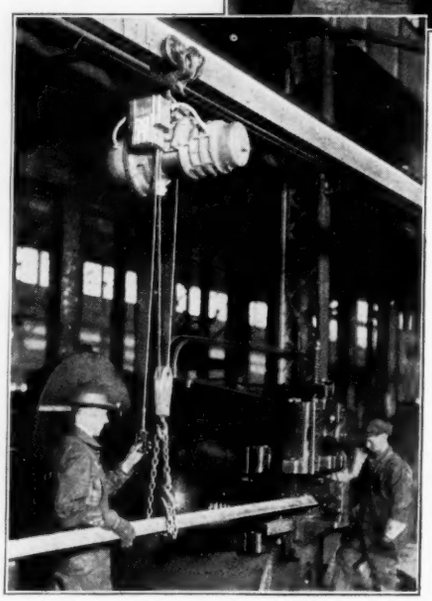

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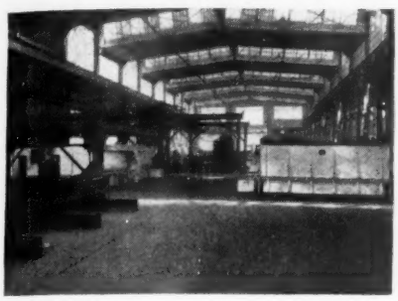

Uniformity and Cleanliness Features of New Electric Heat Treating Plant. Page 43.

THIS WEEK:

ANOTHER important new use —and market—for steel is revealed in the article on page 56. Consider what it will mean if all ships that navigate the air are equipped with alloy steel propellers. It further tends to substantiate the statement made at the recent meeting of the American Iron and Steel institute that in the future "value" rather than tonnage will be the measuring stick for steel. One company is in commercial production; another is nearing that stage. Propeller blades are hollow, and stronger than those of other solid metal.

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STEEL SERVICE

Volume 87 Number 22

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

TO AROUSE the public to the speedy correction of a distressing situation it is often expedient to capitalize the worst. This has been the policy of Washington concerning unemployment. And now, having shocked governors and mayors into action by its dolorous pictures, the administration is laying down its stygian brush. Stating that the first phase of its program is ended (Page 23), the President's unemployment commission no longer is courting publicity, from which some infer the President believes the situation will not worsen. . . . There will, of course, continue to be widespread discussion of unemployment and efforts to alleviate it will not cease, but STEEL believes there is a constructive as well as corrective viewpoint and that the time has come to stress employment. From government sources it learns (Page 23) that to support the 122,000,000 persons in the United States 47,000,000 persons must be gainfully employed 275 days a year. Ten millions are professional men, farmers and proprietors, the remaining 37,000,000 being salary and wage earners subject to occupational hazards. Of the latter, 33,500,000 are now employed, leaving 3,500,000 idle, including "floaters" and some jobless for seasonal reasons. Even conceding that government statistics may be optimistic, at least twelve or thirteen persons are busy for every one idle. There is, indeed, an employment situation!

Unions Pass Work To Hold Record Rates

In the East they tell the story of the important steel executive who, impressed by the "buy now" campaign, directed the supervisor of his estate to proceed with some painting that had been deferred until spring. But when this executive learned the daily rate of painters still was $16.50, his enthusiasm cooled completely. . . . This ties in with the department of labor report (Page 24) that 1930 trade union wage rates are the highest in history, 47 out of 72 unions actually showing increases over last year. Foundries and machine shops, for example, have reduced the work day 1 hour and 24 minutes in six years, while hourly wage rates have risen 10 per cent. . . . Every General Electric employe in December will contribute 1 per cent of his earnings to the G E unemployment fund, the company matching every dollar (Page 24).

Would Ban Alien Labor Two Years

A different approach to the employment situation is the proposal of Senator Reed, of Pennsylvania, that immigration be suspended for two years beginning July 1, 1931, the only exception

—Keystone Photo

All steel and glass! Looking up at the first building of its kind in the United States, recently erected in Worcester, Mass., by the Worcester Pressed Steel Co., the eyes perceive rows of rivets. The building is used for executive offices and an iron and steel museum.

being relatives of resident aliens (Page 24). In this Secretary of Labor Davis, shortly to be junior senator from Pennsylvania, concurs, quite a contrast to the position on restriction of labor supply that would have been taken several years ago by the representatives of so great an industrial state. . . . Both labor and capital would be aided if accidents, which last year cost 5 billions for compensation and medical care and 20 billions indirectly (Page 30), were eliminated.

Business Certain All Is Not Lost

The week's news is replete with evidence that confidence in business for the long pull remains unshaken. New England industrialists, holding their sixth annual council, concur in the forecast that by 1950 New England will have grown one third, in population to 10,000,000 and in industrial workers to 400,000 (Page 26). . . . A survey of Chicago's potentialities in automobile sales discloses the probability that in the next two decades sales will be double those since 1908 (Page 33). . . . Producers of steel sheets and strip, like those of plates, shapes and bars, are so convinced better business is just around the corner that during the remaining months of 1930 they will endeavor to sweep out the price debris which has accumulated since the stock market let down business last fall (Page 67).

Where the Cheerful Sentiment Helps

A considerable portion of the public takes its hard times cheerfully. It is remarkable that in a time of stress amusements, restaurant chains, beverages and confections are the only ones in 26 industrial groups to show larger earnings this year than last, amusements being up 27.9 per cent. Steelmakers' profits for nine months are down 45.96 per cent, while those for all industrials are 36.28 per cent lower than in the comparable period of 1929. At the end of the first half steel's loss was on about a parity with the general average for all (Page 35). . . . John E. Edgerton, president, tells the National Association of Manufacturers reports from 18 states indicate there will be a definite improvement in late winter or early spring Page 30).

Why Patent Office Is Overcrowded

Steel promises to be a formidable rival of aluminum for airplane propellers. One manufacturer is on a production basis, others are coming along. The hollow steel propellers are more flexible; in one type spent engine gas is exhausted through slots, increasing engine efficiency, and muffling the sound of the exhaust (Page 56). . . . Miniature golf may be a joke to some people but it has absorbed 20,000 tons of steel so far, with annual requirements not less than 4000 tons (Page 54). . . . Accuracy and uniformity of heat treatment, ease of control, and cleanliness are features of an electrical installation put in operation by the Bethlehem Steel Co. (Page 43). . . . Ten years ago a steelworks ladle of 100 tons capacity was considered large; today 175-ton ladles are in use. They employ two stoppers to facilitate pouring; are squatty to keep static pressure low, preventing splashing while pouring (Page 48). . . . Michigan Steel Corp., large consumer of sheet bars, is absorbed by National Steel Corp., as the latter's subsidiary, Great Lakes Steel Corp., Detroit, swings into production (Page 25).

Plates Join Ranks of the Organized

To an outlander, probably the most striking characteristic of American industry is its organization—the willingness of competitors to meet around the table, exchange experiences and undertake research and trade promotion for the common good. At Pittsburgh was born last week the Institute of Steel Plate Construction (Page 26), which its sponsors hope will effectively co-ordinate this large and growing industry. . . . One of the oldest of such organizations, the National Founders association, meeting at New York (Page 25) was told that while industry has made great strides in the laboratory in metallurgical practice it has lagged in training its executives for leadership. Coincident, the association approved a program of industrial education. . . . For those who would be good employes and good foremen, six cardinal virtues for each are prescribed (Page 26). . . . In scrap the recent organization of this industry bears further fruit in the calling of a conference with the railroads Jan. 15 to define scrap (Page 27), to include reheated and rerolled as well as remelted material.

Railroads Buying 650,000 Tons of Steel

Like a burst of sunlight through the clouds comes the news of tremendous steel tonnage developing from the railroads. Reasserting themselves as a mainstay of the steel industry, their recent purchases and prospective orders total 650,000 tons (Page 67). . . . A fact which should be borne in mind when the high level of freight rates are contrasted with reduced costs of other services and commodities. Remedial action looking to better co-ordination of transportation facilities is recommended to congress (Page 34). . . . Rival delegations, including steel producers, from Pittsburgh and Youngstown, O., appear before the Mississippi Valley association, seeking endorsement of their routes for the proposed canal to the Ohio river (Page 33). . . . The treasury department makes it clear soviet manganese is not barred by its recent order against importation of convict-tainted goods (Page 30).

Employment at High Rate Despite Somber Views

WASHINGTON — Subtract unemployment from employment and the United States still is seen to be a nation at work, rather than one in which idleness predominates. The American penchant for superlatives is the reason for the fact unemployment is being over-emphasized today to the exclusion of employment.

In the deluge of publicity given to unemployment it would appear a large share of the population is losing sight of the actual state of affairs. Accurate knowledge of them would go a long way to re-establishing confidence, without promoting a false sense of security.

When the bureau of the census completes its enumeration of employment the positive picture of conditions will be clearer and more heartening. Some important statistics now are available. These indicate that the potential number of "gainfully employed" in the United States is 47,000,000.

Of these, 10,000,000 are classified as proprietors, professional men and farmers. This leaves 37,000,000 in the class of potential workers for wages and salaries. By potential is meant the number ordinarily engaged in various lines of work.

Idle Number 7.4 Per Cent

Of the 37,000,000 wage and salary earners it is estimated 3,500,000 are idle. This is 9.4 per cent of the number in that classification, and 7.4 per cent of the total number of 47,000,000. Considering 47,000,000 as the potential "working force" of the nation, 43,500,000 actually are engaged in gainful occupations today.

In the census of 1920 it was found there were 41,000,000 persons, ten years or older, in the classification of "gainfully employed," and of this number 25,000,000 were wage and salary earners. The preliminary figures showing a potential force of 47,000,000 as of May 1, 1930, indicates a gain of about 6,000,000 in the past ten years.

The bureau of labor statistics, which makes monthly reports on employment, shows that in October approximately 4,800,000 persons were employed but this is only for certain industries and does not include either the building industries or farmers.

This figure includes only about 40 per cent of the employment in the industries which are enumerated. In other words, of the industries tabulated by the bureau there were probably 7,500,000 persons employed in October. These industries include manufacturing, coal mining, metalliferous mining, quarrying and nonmetallic mining, crude petroleum producing, public utilities, wholesale and retail trade, hotels, and canning and preserving.

"Probably it is safe to say that on the average the gainful workers do not work more than 275 days in the year," said William M. Steuart, director of the census, discussing employment.

Work Three-Fourths of Time

"So it may be said that the population of more than 122,000,000 is mainly supported, so far as bread-winning labor is concerned, by about 47,000,000 people working about three-fourths of the time or less.

"It is their labor—aided, of course, by machinery and by the power applied through electricity, steam or other means—that produces the food, clothing, houses, automobiles, and all the material goods that we may possess or enjoy, and supplies the professional and personal services that we may command."

Mr. Steuart stated that transportation, trade, domestic and personal service give work to about one third of the men employed. The largest number of men are engaged in agriculture, forestry and animal husbandry.

The majority of these are owners or operators of farms. They assist in giving employment to about 12,000,000 engaged in the manufacturing and mechanical industries, of which agricultural machinery, fertilizer, and numerous commodities required for the conduct of the farm are an important part.

As a practical means of bringing about a close association between the President's emergency committee for employment and the various state, local and industrial organizations throughout the country which are co-operating to stimulate work, Col. Arthur Woods, chairman, will use the branch offices of the commerce department located in many of the large cities.

These offices are engaged primarily in promoting business at home and abroad, and as a result they are in touch with business organizations.

Colonel Woods no longer maintains daily press conference, holding that the first stage of his commission's program has been accomplished.

Foundry and Machine Shop Hours Reduced; Wages Up

In six years wage earners in foundries have had their work week reduced one hour and 24 minutes while their hourly earnings have increased 10 per cent, and their weekly earnings have advanced 8 per cent. Average full time hours per week in 1929 were 51; average earnings per hour, 62.5 cents, and average full-time earnings per week, $31.88.

A survey by the bureau of labor statistics at two-year intervals shows a steady increase in average hourly earnings between 1923 and 1927, but a reduction of one-tenth of a cent between 1927 and 1929. Weekly earnings were 11 cents lower in

UPPER AND LOWER CHORDS OF ROOF TRUSSES ARE HALF I-BEAMS

Note also the arch type of truss employed in the roof of the welded auditorium recently constructed in the court of the General Electric Co. research laboratory at Schenectady, N. Y.

1929 than in 1927. There was no interruption to the steady decline of full-time hours per week between 1923 and 1929.

In machine shops the average full-time hours per week was reduced one-half hour between 1913 and 1929. Average earnings per hour increased 12.6 per cent to 64.1 cents. Average full-time earnings per week advanced 11.7 per cent to $32.24.

Bonus systems were in effect in 45 of the 399 foundries and in 117 of the 508 machine shops investigated. In 18 foundries and 83 machine shops a time-saving bonus was paid to part or all of the employes for doing work of a set standard in less than the stated period of time allowed for it. Some establishments paid employes for all of the time saved while others paid for only a portion of the time at regular hourly rates.

Four Six-Hour Shifts Spread Steel Plant Work

Youngstown, O.—Further adjustments continue to be made by steel companies to divide available work among as many employes as possible. Four six-hour shifts instead of three of eight hours have been put in effect at the Republic Steel Corp.'s Warren, O., steel, sheet and tin plate plant. It is reported this system will be extended by the company to other plants. At a sheet mill in Niles, O., two crews are working each turn, one resting while the other is on duty.

Union Rates This Year Highest in History

Trade union wage rates in 1930 are higher than in any preceding year, the bureau of labor statistics, Washington, finds, basing its data on investigations made in May. Of 72 trades 47 show increases in average hourly rates compared with 1929, 24 show reductions, and one, no change.

The average rate in 1930 for all trades covered is $1.25, compared with $1.204 disclosed by the bureau's similar investigation in 1929. Average specified working hours per week are 43.9 in 1930; in 1929 they were 44.8. The building trades, in which the five-day week is rapidly displacing the 5½-day week, has the shortest average full-time working schedule, 41.9 hours, and teamsters and drivers the longest, 53.7 hours.

Congress Urged To Ban Immigration Two Years

A determined effort will be made in congress convening Dec. 1 to curtail immigration. Senator David A. Reed, Republican, Pennsylvania, will introduce a resolution to suspend all immigration two years from July 1, 1931.

Secretary of Labor Davis, who will resign his cabinet position to become junior senator from Pennsylvania next week, is quoted as indorsing the resolution. He wants congress "to do that very thing" at its last session.

By order of President Hoover admission has been refused to prospective immigrants who would likely become public charges. The number of immigrants admitted during the year ended last June 30 was 241,700, not including 70,823 "visitors."

General Electric Expedites Unemployment Insurance

Every employe of the General Electric Co. from president to office boy, who is working 50 per cent or more full time, will contribute 1 per cent of his December wage to the company's unemployment fund. The company will match such contributions dollar for dollar, it is announced by President Gerard Swope.

Under the original rules of the plan, payments were not to be made for at least six months after its inauguration, which would not be until next January or February. Because of the unemployment emergency it was decided to start relief next month but to limit payments to a maximum of $15 per week. It has also been decided to consider for assistance employes who may not have contributed to the plan but who need assistance.

Approximately 35,000 employes have been contributing and on Dec. 1 they will have paid in $350,000.

Credit Unions Loan Wage Earners $60,000,000 in Year

Credit unions, a wage-earners' bulwark against loan sharks, show a remarkable growth over the past five years. The number now in existence exceeds 974, compared with 284 in 1925. Total resources have increased from $10,706,000 to more than $24,000,000. The number of members has grown from 107,779, to 265,000. Loans made in 1929 amounted to $60,000,000.

Only members of the credit unions are eligible for loans and portions of earnings must be regularly applied in establishing credit and in the repayment of loans. Low interest rates and security of principal are the chief attractions.

Illinois Employment Shrinks

Chicago—Illinois employment declined 2.4 per cent in the Sept. 15-Oct. 15 period, according to the state department of labor, this being the sharpest decrease this year, except in July. Payrolls and man-hours each dropped 2.2 per cent, and the factory group declined 3.6 per cent from the previous 30-day period.

The present volume of industrial employment is 18.6 per cent under October, 1929, while payrolls are 25.7 per cent lower.

J & L Keeps Employes On

Pittsburgh—Jones & Laughlin Steel Corp. is giving employment to 97 per cent of its regular force through shorter hours and continuance of its expansion program. The corporation employs about 23,000 men, 2000 being engaged in construction work.

DOBBIN DOESN'T KNOW FORDS MADE HERE WILL TAKE HIS JOB

Russian horses aid in building the industrial city which the Austin Co., Cleveland, is building for Soviet Russia, 270 miles east of Moscow. The view shows the west service buildings of the machine shop and assembly plant. The output of Ford cars is planned for 150,000 annually. The buildings are of reinforced concrete with brick curtain walls. Russian labor is supervised by Austin engineers in this great project

Rumors Link Many Steel Makers; Mostly Denied

Merger rumors continue rampant. Some are repeated here because of their wide currency and interest.

Truscon Steel Co., Youngstown, O., and Blaw-Knox Co., Pittsburgh, are reported negotiating, which is denied by Walter C. Conger, vice president of Truscon.

An announcement linking McClin-

tic-Marshall Co., Pittsburgh, with Bethlehem Steel Co. continues to be expected about Dec. 1, with nothing official from either company. Rumors involving the Bethlehem company and a warehouse interest are again in circulation.

A merger of independent fabricators in the New York district continues to be rumored.

Nothing definite has developed in regard to acquisition of the Newton Steel Co., Newton Falls, O., and Monroe, Mich., by the Corrigan, McKinney Steel Co., Cleveland. Eventual consummation of this merger, however, is expected at Cleveland. A large Ohio sheet mill interest is also reported seeking Newton.

Michigan Steel To Merge with National Steel Corp.

Announcement has been made at Detroit that plans have been completed for acquisition of the Michigan Steel Corp., Detroit, by the National Steel Corp., Pittsburgh. The former is an important manufacturer of sheets. National Steel Corp. recently completed a mill at Ecorse, Mich., and has started production of sheet bars, billets, bars and strip. Michigan Steel Corp. consumes about 180,000 tons of sheet bars annually and this fact makes the merger logical.

Directors of National Steel have approved the purchase. A meeting of stockholders of Michigan Steel is being called to authorize the transaction, which has been approved by their directors.

Terms of the consolidation have not been announced but it is understood that Michigan Steel stockholders will receive cash and securities on a basis of approximately $50 a share with an option to take not over one-fourth of the consideration in National Steel stock.

A number of interests having large holdings in Michigan Steel Corp. are also owners of substantial blocks of stock in National Steel Corp. George R. Fink is president of both companies, the consolidation of the two has been recognized as a logical step for some time.

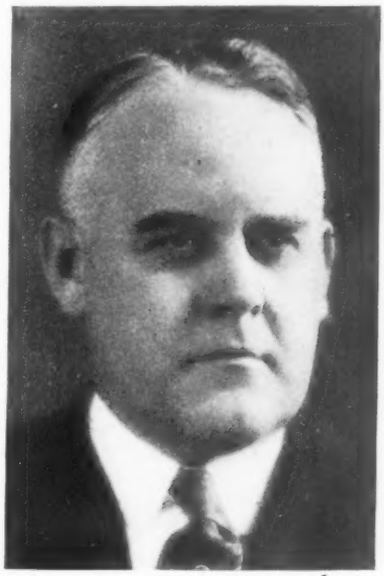
Michigan Steel Corp. was organized in 1922 and built its plant the next year. Its production consists of 175,000 tons annually of stamping, automobile and electric sheets.

National Steel Corp. was formed in September, 1929, by merger of the Great Lakes Steel Co., Detroit, which was formed in March, 1929, the Weirton Steel Co., Weirton, W. Va., and some of the interests of the M. A. Hanna Co., Cleveland. A site on the south shore of Lake Michigan between Gary, Ind., and Michigan City, Ind., has been purchased for later erection of a large steel plant in the Chicago district.

National Founders Sanction Industrial Education Plan

NEED for greater research and technical leadership in the foundry industry was stressed by Richard S. McCaffery, professor of metallurgy, University of Wisconsin, Madison, Wis., at the thirty-fourth annual convention of the National Founders association, Hotel Astor, New York, Nov. 19-20.

Industry is years behind the laboratory in metallurgical practice and industry needs men to develop this research, he said. Due to conditions imposed by a highly specialized industry, men in the industry have not had a sufficient all-around training to enable them even to keep in step with current developments. The speaker recommended greater consideration of methods of training men.



S. Wells Utley
Elected president of the National Founders association

This subject of training, with other personnel problems, dominated discussion, although such subjects as cost accounting and foundry practice came in for consideration. Approximately 190 were registered, a slight gain over a year ago.

With little hope for an early revival in business, members passed a resolution calling upon all to do everything possible in providing for as wide a distribution of work as possible. That this already is being done in good measure, however, was indicated by Thomas S. Hammond, retiring president, when he pointed out that never before in the history of the foundry industry has the unemployment problem received such efficient handling.

"Instead of the wholesale laying off of employes as in the old days," he said, "there has been an intelligent division of work. Thrift plans, insurance plans, education of the employe so that he may plan better for his future, has given him still further protection. To the extent we anticipate and solve these problems for ourselves, to that extent will we be free from the danger of perhaps unwise government regulation."

Membership Holds Well

Association membership, it was revealed, comprised 463 plants, a decline of 13 within the past year, of which latter eight had permanently closed their foundry departments. In view of existing poor business conditions this showing was regarded as satisfactory. Only one strike occurred at member plants during the year.

A new program of industrial education was approved by members, consisting of a series of regional meetings to be conducted under the general direction of Dr. Harry Myers, Dayton, O., who gave a working demonstration of the manner in which these meetings might be conducted and who expressed his views, as an industrial engineer, as to along what lines more efficient plant operation could be attained.

As shown elsewhere, Dr. Myers set forth two groups of principles for most efficient work by employes and foremen. A tieup exists between these two sets of principles, he declared. The foreman must provide a clean and orderly department, but he can never do it unless his men are clean and orderly. He must provide proper equipment and materials, but he cannot unless his men take good care of the materials.

Co-operation Is Foremost

The foreman must give proper instructions but it is useless unless his men follow them carefully and continually. Proper supervision is impossible, he said, unless the men want to work from whistle to whistle and every day and work well with others. Finally, if the foreman observes the first five of his principles, and the men do their six, he will be able to do his sixth and give proper pay, because pay, Dr. Myers said, is just a measure of work.

These proposed regional meetings, it was revealed, would begin at 10 a.m. and continue until late in the

afternoon. It was suggested that where possible these meetings might be held at foremen's clubs in the various cities.

Discussing the need for greater technical training, Prof. McCaffery described briefly the manner in which the University of Wisconsin and the foundry industry of that state are co-operating in the matter of educational work.

Briefly, the method calls first for the further development of men with technical engineering background and then, largely with the assistance of these men, the educational development of those without this engineering background. The university has an extension course in metallurgy whereby a technical graduate can obtain a master's degree. With this incentive, he said, technical school graduates in ten plants in Milwaukee alone recently completed a research program under the supervision of the university. These men met in Milwaukee every Friday night throughout a period of three years in order to obtain this degree.

For men who have not a technical background the university has been conducting regular meetings in Milwaukee, with the co-operation of the foundries of that city, for approximately five years with considerable benefit to the men. These meetings, he said, are now attended by

(*Concluded on Page* 52)

Gives Laws for Good Work and Foremanship

Certain fundamental rules can be applied to insure good working by industrial employes and satisfactory supervision by foremen, Dr. Harry Myers, industrial engineer, Dayton, O., told members of the National Founders association in an address at the association's convention in New York, Nov. 19-20. For employes:

1. **Be clean and orderly.**
2. **Take good care of property, equipment and materials.**
3. **Follow instructions carefully and continually.**
4. **Work well from whistle to whistle.**
5. **Work every day and tell your foreman when you cannot.**
6. **Work well with others.**

For Foremen:

1. **Maintain a clean and orderly department.**
2. **Have proper equipment.**
3. **Have proper materials.**
4. **Insist on proper construction.**
5. **Maintain prompt supervision.**
6. **Give proper compensation.**

Steel Plate Construction Industry Forms Institute; 75 Already Members

NEW YORK—Directors of the newly-organized Institute of Steel Plate Construction will meet here this week to further perfect organization details. Officers will be nominated, with action on their election to be taken at a general meeting of members later this month.

The institute, recently organized in Pittsburgh, has a membership of 75, representing plate shops with an aggregate annual capacity of 670,000 tons, or, it is said, approximately 70 per cent of the country's total.

Others have indicated their intention of becoming affiliated with the institute, with a further drive for membership planned. It is believed that fully 250 to 300 of the approximately 400 plate producing and fabricating shops of the country are of sufficient size to warrant their interest in this organization.

To Establish Trade Standards

According to J. W. Poushey, acting secretary, the new organization will deal with general questions affecting the industry and will endeavor to establish new trade standards, develop new uses for plates and devote special attention to problems of distribution and production. A statistical bureau will be established. The institute will have its headquarters at 36 West Forty-second street, this city.

Charles F. Abbott, executive director of the American Institute of Steel Construction, was principal speaker at the meeting in Pittsburgh. George P. Bard, of Tippett & Wood, 5 Beekman street, New York, presided. The following are directors:

A. C. Caverno, Lancaster Iron Works, New York; W. S. Wheeler, Pennsylvania Engineering Works, New Castle, Pa.; D. P. Daniels, McClintic-Marshall Co., Pittsburgh; George McAleeman, McAleeman Bros. & Co., Pittsburgh; George Horton, Chicago Bridge & Iron Works, Chicago; S. E. Fairchild Jr., Cruse-Kemper Co., Ambler, Pa., A. M. Duncan, Cole & Duncan, Long Island City, N. Y.; J. A. Connelly, Petroleum Iron Works, New York; and W. R. Guest, Birmingham Tank Co., Verona, Pa.

Companies already members of the institute include:

Pittsburgh-Des Moines Steel Co., Pittsburgh; Downington Iron Works, Downington, Pa.; Coatesville Boiler Works, Coatesville, Pa.; Youngstown Boiler & Tank Co., Youngstown, O.; M. H. Treadwell Co., New York; R. S. Newbold & Son Co., Norristown, Pa.; Mead-Penn Iron Works, Pittsburgh; Struthers-Wells-Titusville Co., Warren, Pa.; Tippett & Wood, Phillipsburg, N. J.; Warren City Tank & Boiler Co., Warren, O.; Hammond Iron Works, Warren, Pa.

A. G. Reeves Steel Construction Co., Alliance, O.; Tracy Bros. Gas Construction Co., Cincinnati; Quaker City Iron Works, Philadelphia; Witt-Humphrey Steel Co., Greensburg, Pa.; Graver Tank Mfg. Co., East Chicago, Ind.; William B. Pollock Co., Youngstown, O.; C. F. Adamson & Co., East Palestine, O.

Biggs Boiler Works Co., Akron, O.; William B. Scaife & Sons, Oakmont, Pa.; Littleford Bros., Cincinnati; New York Engineering Co., New York; Nazareth Foundry & Machine Co., Nazareth, Pa.; Steel Plate Products Co., Pottstown, Pa.; Heat Transfer Products Co., New York; Oil City Boiler Works, Oil City, Pa.; McNeil Boiler Co., Akron, O.; Birchfield Boiler Co., Tacoma, Wash.; Sun Shipbuilding Co., Chester, Pa.

Duff Patents Co., Pittsburgh; D. Connelly Boiler Co., Cleveland; Virginia Bridge & Iron Works, Roanoke, Va.; Columbiana Boiler Co., Columbiana, O.; Branbacher Iron Works, Los Angeles; L. O. Koven & Brother Inc., Jersey City, N. J.; St. Louis Structural Steel Co., East St. Louis, Ill.

Bos Hatten Inc., Buffalo; Novelty Steam Boiler Works Co., Baltimore; Willamette Iron & Steel Works, Portland, Oreg.; Sisterville Tank & Boiler Works, Sisterville, W. Va.; R. Munroe & Sons Mfg. Corp., Pittsburgh; McNamara Bros. Co., Westport, Baltimore.

James Lappan Mfg. Co., Gerstner Boiler Works Inc., James McNeil & Brother Co., Walter Long Mfg. Co., Pearson Mfg. Co., S. B. Rheam Co., all of Pittsburgh; Central Boiler, Tank & Plate Iron Works, Millvale, Pa.; Sharpsville Boiler Works Co., Sharpsville, Pa.; and T. P. Carlson Co. Inc., Lincoln, N. J.

Sees New England Gaining One-third in 20 Years

Boston—Manufacturing will continue to be New England's chief economic activity in the next 20 years and in that period a growth of one-third can be expected, John F. Tinsley, chairman of the community development committee of the New England council, predicted last week at the sixth New England conference here. This would give New England a population of 10,000,000 persons and the industrial workers totaling 400,000 by 1950.

James W. Hook, president, Geometric Tool Co., New Haven, Conn., chairman of the industrial committee of the council, said that industry wants the community to understand it and that it demands of the community that the latter stand for high ideals and make for good government and good citizenship.

Detroit Brass & Malleable Works, Detroit, has increased capital from $1,650,000 to $2,350,000.

Exports Up, Imports Fall; October's Auto Total Lowest

UNITED STATES export trade in iron and steel products in October, 131,850 gross tons in all, exceeded the September total by 639 tons. By the same comparison, imports at 38,344 tons were 1941 tons less than in the month before, according to preliminary figures of the iron and steel division, bureau of foreign and domestic commerce.

The principal products exported were skelp, 20,061 tons; black steel sheets, 15,494 tons; tin plate, 14,029 tons; scrap, 12,156 tons; and plain structural shapes, 10,801 tons.

Canada with 65,071 tons, Japan taking 9395 tons, Mexico at 6929 tons, Argentina with 6519 tons, and Chile buying 5995 tons, were the principal markets. The tonnages shown for the last three countries named represent material increases over September's trade.

A large part of the 38,344 tons of iron and steel imported in October was pig iron, 13,552 tons. Other outstanding products in the month's trade were structural shapes, 4881 tons; scrap 4336 tons; hoops, 2444 tons, and ferromanganese 2247 tons. The first and third items represent gains over last month. The principal countries in this trade were, in order, India, Germany, United Kingdom, Belgium and Canada.

Sheet Sales Down in October; Output Gains

Daily average sheet steel sales by independent mills in October dropped 28 per cent, production increased 4 per cent, and shipments gained 0.3 per cent, compared with September. Total sales for October were 158,700 tons; production 193,934 tons, and shipments 193,615 tons.

The National Association of Flat Rolled Steel Manufacturers, Cleveland, reports unfilled tonnage Nov. 1 as 319,518 tons; approximate finished stock on hand awaiting shipment 98,189 tons, and approximate amount in stock, unsold, 91,024 tons. Total capacity in the United States for October was 566,600 net tons, and the capacity on which the foregoing October figures are based is 383,000 net tons.

Electric Orders Trend Off

New orders for electrical goods booked during third quarter were $217,818,078, compared with $276,732,039 for second quarter, and $338,169,678 for 1929's third quarter. Bookings include motors, storage batteries, domestic appliances and industrial equipment, as reported by 81 manufacturers to the department of commerce. Five-year, 1925-1929, quarterly average has been $257,046,210. Following are reports' summary:

Quarters	1929	1930
1st	$322,424,619	$298,733,208
2nd	340,863,112	*276,732,039
3rd	338,169,678	217,818,078
4th	288,696,415	.....
Total	$1,290,153,824	.....

*Revised.

October Auto Output Declines to 1930 Low

Automobile production totaled 150,044 passenger cars and trucks in October, falling to the low month for 1930, and the lowest month since December, 1927, with the exception of December, 1929. Decline was shown in both passenger and truck divisions, according to department of commerce reports from 144 manufacturers. Canadian production, by the Dominion bureau of statistics, is likewise down. Monthly statement follows:

	United States			Canada
1929	Total	Passenger cars	Trucks	Total
Oct.	380,017	318,462	60,687	14,523
(10 mos.)	5,020,840	4,310,954	695,426	248,376
Nov.	217,573	167,846	48,081	9,424
Dec.	120,007	91,011	27,513	5,495
(Year)	5,358,420	4,569,811	771,020	263,295
1930				
Jan.	275,374	236,145	38,657	10,388
Feb.	346,940	296,461	49,457	15,548
Mar.	401,313	335,720	64,204	20,730
Apr.	443,038	374,913	67,560	24,257
May	417,406	362,522	54,370	24,672
June	335,477	289,245	45,773	15,090
July	262,364	222,459	39,664	10,188
Aug.*	223,036	187,037	35,748	9,792
Sept.*	216,877	175,311	41,157	7,957
Oct.	150,044	112,209	37,244	4,541
(10 mos.)	3,071,869	2,592,022	473,834	143,163

*Revised.

River Traffic at Pittsburgh Shows Further Increases

River shipments of iron and steel products in the Pittsburgh district increased during October compared with September and with October, 1929. Combined shipments for the three rivers amounted to 255,050 tons, against 238,509 tons a year ago. Traffic for the first ten months of this year amounted to 2,130,060 tons, compared with 2,108,204 tons in the corresponding period of last year.

The movement over the Ohio river continues slightly ahead of that over the Monongahela. Comparative monthly figures follows:

	Allegheny	Monongahela	Ohio
1929			
Oct.	.....	119,380	119,129
(10 mos.)	1,607	1,059,581	1,047,016
Nov.	500	83,189	88,011
Dec.	400	60,957	77,885
Total	2,507	1,203,827	1,212,912
1930			
Jan.	100	58,784	64,736
Feb.	210	80,327	74,385
March	100	111,702	109,911
April	1,000	70,229	66,482
May	.....	117,942	128,502
June	700	137,603	144,099
July	1,125	132,161	147,558
August	2,600	96,498	107,948
Sept.	5,100	106,079	109,129
Oct.	11,490	105,451	138,109
(10 mos.)	22,425	1,016,776	1,090,859

Malleable Castings Again Reveal Output Increase

Production of malleable castings was at 28.8 per cent of capacity when output of 28,641 net tons was recorded by the department of commerce from 117 firms in October. Shipments gained from the revised September aggregate, though new orders were down slightly. Monthly statistics follow:

	Production, tons	Shipments, tons	Orders booked tons	Per cent cap. operated
1929				
Oct.	65,526	58,733	61,164	66.7
(10 mos.)	732,368	723,974	702,258	76.1
Nov.	46,459	46,487	40,145	47.7
Dec.	46,029	47,689	43,475	47.3
(Year)	824,856	818,150	785,878	71.3
1930				
Jan.	61,381	57,820	58,009	61.6
Feb.	65,942	59,971	61,606	67.4
March	63,464	65,164	60,915	64.6
April	61,984	60,875	54,625	63.1
May	53,502	55,656	47,022	53.8
June	39,347	43,937	33,865	40.3
July*	30,911	32,656	30,068	31.0
Aug.	25,614	31,845	25,409	26.2
Sept.*	26,505	29,157	26,228	27.2
Oct.**	28,641	29,176	23,848	28.8
(10 mos.)	457,291	466,257	421,595	46.4

*Revised. **Preliminary.

Seek New Scrap Definition

Hearings will be held Jan. 13 before the official classification committee of American railroads in an effort to evolve a definition of scrap that will fit all conditions. This has been under consideration for at least ten years, without a decision.

It has been suggested that the new definition be enlarged to include items which are reheated or rerolled in addition to those which are remelted. At present these items pay the same rate as new steel.

Industrial Men in the Day's News

H. G. Batcheller, New President, Ludlum Steel Co., Watervliet, N. Y.

MADE assistant to the president in 1916 and elected vice president in 1919, he became president of Ludlum Steel Co. two weeks ago.

PREVIOUS training was with Carnegie Steel Co., initially in its New York sales office, followed by a training course at its Pittsburgh mills.

HE also holds executive offices in Krupp Nirosta Co. Inc., Associated Alloy Steel Co., and directorships in Canadian Atlas Steels Ltd., Duriron Co., and Nitralloy Corp.

ALMOST fifteen years from the time he became affiliated with the Ludlum Steel Co., Watervliet, N. Y., H. G. Batcheller has become president of it. He succeeds Edwin Corning, who has resigned to become chairman of the board, a newly-created office.

Born in New York in 1886, Mr. Batcheller was graduated from Wesleyan university in 1907. Shortly after graduating he entered the employ of the Carnegie Steel Co., Pittsburgh. He became identified with that interest's New York sales department, remaining until 1913, when he was transferred to Pittsburgh to take up the training school course prescribed by it in its mills in the Pittsburgh district.

After completing the course he returned to the Carnegie company's sales department in New York but resigned Jan. 1, 1916, to become assistant to the president of the Ludlum Steel Co. About three years later, in 1919, he was elected vice president, and was promoted to the presidency Nov. 13, 1930.

Long interested in the new stainless and corrosion-resistant steels, Mr. Batcheller became identified with Krupp Nirosta Co. Inc., 230 Park avenue, New York, and at present is president and director. He also holds those offices in Associated Alloy Steel Co. Inc., Union Trust building, Cleveland. He is a director of Canadian Atlas Steels Ltd., Welland, Ont., and likewise serves on the boards of Duriron Co., Dayton, O., and Nitralloy Corp., 52 Broadway, New York.

Mr. Batcheller is a member of the American Iron and Steel institute, American Society for Steel Treating, and maintains memberships in the Fort Orange club, Albany, N. Y., Schuyler Meadows club, Albany, and Laurentian club, Lac la Peche, Quebec.

SEVERN P. KER, president, Sharon Steel Hoop Co., Sharon, Pa., since 1910, will resign shortly to become chairman of the board of directors. Company by-laws are being altered to permit of Mr. Ker's election to that office and the selection of a president to succeed him.

Mr. Ker was born at Richmond, Va., Feb. 17, 1864, and in 1885 he became affiliated with Smith Bros. & Co., Allegheny, Pa., which later became La Belle Steel Co. In 1887 he became secretary in charge of sales, remaining in that office until its merger with Crucible Steel Co. of America in 1899. That year he became vice president, American Steel Hoop Co., Pittsburgh, remaining until 1902, this company having merged into Carnegie Steel Co. in 1901.

Early in 1903 he became identified with Crucible Steel Co. of America, Pittsburgh, and in 1905 was elected vice president in charge of sales of Republic Iron & Steel Co., Youngstown, O. He filled that office until 1909, then becoming general manager for Sharon Steel Hoop Co., Sharon, Pa., and Youngstown, O. He was elected president of the Sharon company in 1910. He also is president of Youngstown Iron & Steel Co.

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J. M. Schoonmaker Jr., president, General Aviation Corp., has been elected a director of Pittsburgh Steel Co., Pittsburgh.

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C. S. McKinley, formerly Philadelphia district sales manager, Republic Steel Corp., Youngstown, O., has become affiliated with the Philadelphia sales organization of Jones & Laughlin Steel Corp., Pittsburgh.

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J. E. McLurg, vice president and director, Dominion Steel & Coal Corp., Montreal, Que., has resigned. In 1923 Mr. McLurg became vice president in charge of operations, British Empire Steel Corp., at Sydney, N. S., going in 1928 to the head office at Montreal, where he remained until reorganization of the corporation last July.

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T. I. Phillips, formerly superintendent of metal stamping at AB building, Nuttall works, Pittsburgh, Westinghouse Electric & Mfg. Co.,

East Pittsburgh, Pa., has been appointed works manager to succeed H. A. Houston, resigned.

W. H. Himes, in the mechanical engineering department, Nuttall works, at East Pittsburgh has been promoted to manager of engineering department, following the resignation of L. F. Burnham.

L. R. Botsai has been appointed gearing apparatus manager, Nuttall works, to succeed E. E. Boon, resigned. Mr. Botsai pormerly was industrial manager of the central district.

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Felix Hurwitz has been made office manager, reinforcing bar department, for Igoe Bros., Newark, N. J. He has been connected with the sales

Severn P. Ker

force for some time and succeeds R. H. Grubb, who now is in the company's engineering department.

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Max W. Babb, vice president, Allis-Chalmers Mfg. Co., Milwaukee, has been re-elected a class B director of the Federal Reserve bank, Chicago.

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M. H. Thompson, of the executive staff, George L. Squires Co., Buffalo, has been sent to Venezuela to supervise erection of a large amount of sugar mill machinery.

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J. A. Jones, president, Jones Bros. Structural Steel Co., Ravenna, O., was elected a member from Portage county of Ohio state legislature at the recent election.

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H. B. Kilroe, 507 Dayton Industries building, Dayton, O., has been appointed representative in southern Ohio territory covering Dayton and Columbus, O., and including Indianapolis, for Allied Die Casting Corp., Long Island City, N. Y.

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Fred A. Benz, chief executive, Benz Engineering Corp., Salamanca, N. Y., has been elected mayor of that city until Jan. 1, 1932, following the death of Bert L. Hunt.

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A. K. Bradley has been appointed manager of the gas producer department, Morgan Construction Co., Worcester, Mass. He succeeds the late E. A. W. Jefferies whose assistant he had been.

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W. J. Nutto, 1 West Sixteenth street, Oklahoma City, Okla., has been appointed manager of oil tool sales division in mid-continent territory for Chicago Pneumatic Tool Co., New York.

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Edward C. Stoneham, secretary, Stoneham Engineering Co. and Federal Tool & Machine Co., Dayton, O., has also been elected treasurer to succeed the late Walter Stoneham, whose death was noted in STEEL of Nov. 6.

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Edward Rahm, formerly general manager, Industrial Equipment Corp., Pittsburgh, has become associated with James A. Bradley, State Theater building, Pittsburgh, dealer in rebuilt steel mill and industrial equipment.

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James B. Armstrong, 1 East Forty-second street, New York, has been appointed district sales representative for General Drop Forge Co., Buffalo, Reading Steel Casting Co. Inc., Bridgeport, Conn. He also has other accounts.

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Lawrence H. Underwood, general superintendent, Indiana Harbor, Ind., plant, Youngstown Sheet & Tube Co., Youngstown, O., has been promoted to district manager for the company in the Middle West. Prior to making his home in Gary, Ind., Mr. Underwood served as eastern blast furnace superintendent, National Tube Co., Pittsburgh, and then was employed by Illinois Steel Co., Chicago, until 1915. He left its employ to become blast furnace superintendent for Youngstown Sheet & Tube Co. at its Ohio plant. He returned to Gary in 1925 and later was appointed general superintendent at Indiana Harbor.

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Presly N. Guthrie Jr., of Greenwich, Conn., vice president in charge of sales, Reading Iron Co., Reading, Pa., was elected president Nov. 18. He succeeds Leon E. Thomas, who resigned July 31, 1930, since which time the duties of president have been performed by A. J. Maloney, chairman of the board. The company is owned by Philadelphia & Reading Coal & Iron Co., Philadelphia.

Mr. Guthrie was born in Pittsburgh April 26, 1876, and received his initial business training with Park Bros. & Co., owners and operators of Black Diamond Steel Works, the nucleus of the present Crucible Steel Co. of America. His next connection was with the natural gas division, Philadelphia Co., Pittsburgh, as superintendent, Hornell Gas Light Co., Hornell, N. Y., and general manager, Chemung County Gas Co., Elmira, N. Y. He later returned to the iron and steel business as sales agent and general manager of sales, Longmead Iron Co., Conshohocken, Pa., maker of wrought iron pipe, and

Presly N. Guthrie Jr.

in 1909 he had charge of sales, South Chester Tube Co., Chester, Pa.

On a leave of absence from July, 1917, until the end of the World war, he served the government as assistant director, bureau of oil well supplies, oil division, United States fuel administration. He returned to South Chester Tube Co. and in February, 1919, was made manager of sales, in which capacity he served until his resignation in December, 1929, to become vice president in charge of sales for Reading Iron Co.

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Harold Davey who has been district sales manager at Detroit for Empire Steel Corp., Mansfield, O., has resigned, and has become district manager at Detroit for Canton Tin Plate Co., Canton, O., of which his brother, William H. Davey is president. An office will be established about Dec. 1 in the General Motors building, Detroit.

Russell Wyckoff, formerly with United Alloy Steel Corp., Massillon,

O., and later with Republic Steel Corp., has been named to succeed Mr. Davey as Detroit manager, Empire Steel Corp., whose headquarters have been removed to the Book building from General Motors building.

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Lorenz Iversen, vice president, Mesta Machine Co., Pittsburgh and West Homestead, Pa., has been elected president to succeed the late Harry F. Wahr. Mr. Iversen has been associated with the company for many years. Prior to his election as vice president in 1925 he had been chief engineer.

L. W. Mesta has been elected vice president. He formerly was assistant general superintendent and has been with the company since his graduation in mechanical engineering in 1911 from the University of Pittsburgh.

F. A. Mesta has been elected director to fill the vacancy on the board caused by the death of Mr. Wahr.

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Paul Llewellyn, formerly president, Interstate Iron & Steel Co., Chicago, has been elected chairman of the board of the reorganized Empire Steel Corp., Mansfield, O. He had been president of Interstate since 1925, having previously been vice president in charge of sales. George M. Smith is general superintendent, Stanley A. Richardson chief metallurgist, Frank B. Handy assistant secretary, Burton L. Verner purchasing agent, and Albert Meihack open-hearth superintendent. All formerly were with Interstate Iron & Steel Co., at Chicago, and all now are located at the Empire general offices, Mansfield.

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Ralph M. Bowman has been appointed purchasing agent, Republic Steel Corp., Youngstown, O., to succeed W. J. Massman, resigned. Mr. Bowman formerly was purchasing agent, Central Alloy Steel Corp., Massillon, O., and more recently was buyer in charge of raw materials for the Republic corporation. C. A. Ilgenfritz is director of purchases.

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A. M. Cullum, Tulsa, Okla., has resigned as oil country sales manager, Reading Iron Co., Reading, Pa., effective Dec. 1. He has been associated with the Reading company for the past ten years, starting as a clerk at its Reo puddling plant. He will become affiliated with Harbison-Walker Refractories Co., Pittsburgh.

R. W. Thompson has been appointed director of public relations in addition to his duties as advertising manager, manager of cut nail sales, and manager of sales for the Stoyestown, Pa., coal mine, owned and operated by Reading company.

Harold S. Bard has been appointed district sales representative for the Reading company with headquarters at 1714 Engineering building, Chicago, to succeed R. A. Griffin, resigned. Mr. Bard has been associated with the Reading company for the past seven years as a salesman in the New York district.

Cost of Industrial Accidents $5,000,000,000

Industrial accidents cost approximately $5,000,000,000 annually, the loss falling on employe, employer and the state. This estimate by the bureau of labor statistics is based on an assumption that the indirect cost is four times as large as the compensation and medical payments.

The number of lost-time injuries each year is approximately 3,000,000, of which 25,000 are fatalities. In addition there are about 87,000,000 minor injuries. Many factors have been considered by the bureau in arriving at its estimate of the total cost.

States Show Confidence in Business Upward Trend

National Association of Manufacturers, Washington, has made a survey of industrial conditions in 18 states which reveals a slight betterment in the unemployment situation and improvement in general business, according to John E. Edgerton, president, in addressing the annual dinner of the New York state chamber of commerce at New York, Nov. 22.

The states' reports as a group reveal that while business is still below this time a year ago, there has been some improvement in the past few months, betterment of unemployment situation, and an almost unanimous upward curve of confidence that in late winter or early spring there should be a gradual and definite improvement.

Among industries which seem to be on the mend are steel, automobiles and allied industries, and railroads in some sections.

Manganese Convict-Mined?

Washington—J. Carson Adkerson, president, American Manganese Producers' association, in a statement Nov. 25 voiced his belief that the new convict labor regulation promulgated by the treasury department will take care of the Soviet manganese ore situation and alleged dumping in this country over which domestic producers have been so concerned lately.

"If these regulations do not help the situation," Mr. Adkerson said, "our association will pursue its antidumping case, and if this too fails, we will try for legislation."

Obituaries

EDWARD H. KENYON, 70, who died Nov. 18 at Miami Beach, Fla., was many years a steel expert with Carnegie Steel Co., resigning when the United States Steel Corp. was formed. He was inspecting engineer of steel works at the Chicago world's fair and at one time was inspecting engineer of steel with headquarters in Cleveland. He retired 30 years ago.

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Fred A. Lundahl, 47, president Moline Pressed Steel Co., Moline, Ill., died at Moline hospital Nov. 14.

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J. A. Colby, senior member of the firm of Colby & Christie, Philadelphia, died recently.

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Robert J. Gross, 80, former vice president, American Locomotive Co., Dunkirk, N. Y., and first president of United States Radiator Corp., there, died Nov. 21.

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J. A. Kemp, president, Wichita Falls Motor Truck Co., Wichita Falls, Tex. ,and prominently identified with West Texas railroad and industrial projects, died Nov. 16 at Austin, Tex.

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James R. Vance, 81, former president, Geneva Boiler Works, Geneva, N. Y., and inventor of the Vance and Columbia boilers, died Nov. 16 in his home in that city. He retired several years ago.

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Henry T. Pratt, 76, who died in St. Petersburg, Fla., Nov. 11, was connected with American Steel & Wire Co. for 32 years of his active business career. He was district sales manager at Cleveland for that company for many years.

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Conrad W. Troll, 72, president, Belmont Stamping & Enameling Co., New Philadelphia, O., C. L. Ayers Coal Co., Cleveland, Troll Coal Mining Co., St. Clairsville, O., Belmont Casket Co., Columbus and Shadyside, O., died recently at his Cleveland Heights, O., home. He also was director of several Cleveland banks and was chairman of the board, Second National bank, St. Clairsville.

Here and There in Industry

JOSEPH T. RYERSON & SON INC., Chicago, has bought the stock and goodwill of the sheet metal division of the Richards Co. Inc., Boston. The latter, which was founded in 1812, will continue in business, specializing in pig metals. Stocks taken over by the Ryerson company include various lines of steel and iron sheets and will be handled from the Ryerson warehouse in Boston. The Ryerson organization entered the Boston warehouse field in 1926 by purchase of the Penn Metal Co. Two years later the plant, goodwill and stocks of the E. P. Sanderson Co. were added. The recent purchase enlarges sheet metal facilities .

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Carboloy Co. Inc., Detroit, has moved its branch office at Cleveland to 4503 Hough avenue.

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St. Louis Screw & Bolt Co., St. Louis, has contracted with the Geo. J. Hagan Co., Pittsburgh, for a billet heating furnace.

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Robertson-Cataract Electric Co., Buffalo, has been awarded a contract for electric equipment for the new Ford Motor Co. plant at Buffalo. This will aggregate about $200,000.

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Ex-Cell-O Aircraft & Tool Corp., Detroit, has added a department for the manufacture of broaches and accessory fixtures. Gages for checking broached parts will also be made.

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Thermoid Co., Trenton, N. J., manufacturer of asbestos products, including brake linings, is concluding negotiations for the purchase of the Woven Steel Hose & Rubber Co., Trenton.

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Polson Mfg. Co., Buffalo, has been sold to the Great Lakes Pressed Steel Corp., Buffalo. The Great Lakes company will continue production of the metal specialties manufactured by the Polson company.

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DeForest Crosley Radio Co. Ltd., Montreal, Que., has formed the Hammond Co. of Canada Ltd. as a wholly-owned subsidiary, to manufacture and market in Canada a line of synchronized electric clocks and similar products.

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Knapp-Monarch Co., St. Louis, manufacturer of household appliances, has purchased the former plant of National Carbon Co., at Belleville, Ill., across the river from St. Louis, and will move its factory from Webster City, Iowa, to the new location.

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Farrar & Trefts, Buffalo, boiler, tank and plate manufacturers, have moved into a new factory at Milburn street and the New York Central railroad. In addition to a main building with 40,000 square feet of space there are several smaller units and storage facilities. The company was organized more than 65 years ago.

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Genfire Steel Co., Youngstown, O., has been merged with the Truscon Steel Co., Youngstown, as its dealer and commodity division under direction of W. B. Turner, formerly manager of the Genfire Steel Co. The sales organization of the latter company will be kept intact and merged with the Truscon sales department.

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Warren Pipe Co. of Massachusetts Inc., Everett, Mass., has started production of cast pipe in its new plant, using the sand-spun process. The company is a subsidiary of the Warren Foundry & Pipe Co., Philipsburg, N. J. The new plant has a site of 10 acres and four buildings have been erected.

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Chicago Bridge & Iron Works, Chicago, has let a contract to the Virginia Bridge & Iron Co., Roanoke, Va., for a structural shop 100 x 500 feet at the Chicago company's plant at Birmingham, Ala. It will be used for fabrication of structural work erected in connection with tanks and other steel plate structures.

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William B. Pollock Co., Youngstown, O., manufacturer of steel plate construction, and fabricated work for blast furnaces and steel works, is building 15 ladles for the open-hearth department of the Republic Steel Corp. at Youngstown. Two of the ladles are of 150 tons capacity and the remaining 13 are of 125 tons capacity.

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Thomas & Skinner Steel Products Co., Indianapolis, has bought from the Follansbee Bros. Co., Pittsburgh, the latter's sheet steel warehouse stock at Indianapolis. E. C. Folkening, who has been with the Follansbee company for 25 years, will continue district sales manager at Indianapolis. The Thomas & Skinner company has been appointed distributor for Indiana territory by the Simonds Saw & Steel Co., Lockport, N. Y., manufacturer of alloy steels.

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Milwaukee Electric Crane & Hoist Corp., a subsidiary of the Harnischfeger Corp., Milwaukee, announces it has booked more business to the middle of October than for all of 1929 and has kept its full force employed. Recent orders include a 30-ton and a 20-ton lowhead and a 30-ton gantry for the Lehigh Valley railroad, a 25-ton gantry for the Grand Trunk railroad, a 10-ton trolley crane for the Newport News Shipbuilding & Dry Dock Co., Newport News Va., 10-ton trolley crane for Moise Steel Co., Milwaukee, and a 3-ton crane for the Belle City Malleable Co., Racine, Wis.

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Ontario Power & Service Corp. Ltd., a subsidiary of the Abitibi Power & Paper Co., Toronto, Ont., has let several contracts for equipment for its hydroelectric power plant at Abitibi canyon. Allis-Chalmers Co. of Canada has been given a contract for five water wheels of 66,000 horsepower each; Dominion Bridge Co., Montreal, will fabricate five penstocks. Bids have been asked on five generators of 55,000 kilovolt-ampere capacity.

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Mueller Engineering Co., Racine, Wis., manufacturer of hydraulic jacks, has been bought by the Hein-Werner Motor Parts Corp., Waukesha, Wis., and equipment of the Racine plant is being transfered to Waukesha. The Hein-Werner company, which is closely allied with the Waukesha Motor Co., plans an addition to be ready March 1. J. J. Mueller and D. J. Mueller of the Racine company are joining the Hein-Werner engineering staff.

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Wickwire Spencer Steel Co., New York, has leased a building to be erected at Tulsa, Okla., and will enlarge its office space and establish a warehouse to carry stocks of wire rope, chain link fence, electric welded fabric, welding rods and other products. The Tulsa office covers Kansas, Oklahoma, Texas, New Mexico, Arkansas, Louisiana and Mississippi. The Wickwire Spencer Sales Corp. will sell all the products of that company and American Wire Fabrics Corp., another subsidiary, will sell its own products, including screen cloth, poultry netting and similar products. E. L. Stevens will supervise sales of both companies. L. J. Baldwin will be in charge of sales for the American Wire Fabrics Corp., J. J. Lovell of Wickwire Spencer wire rope, and G. L. Crawford of Clinton electric welded fabric.

Wesley Bowman Studio

Steel Angles from Chicago

CHICAGO

FARM equipment steel and cross-country pipe lines counter-balance at this time the railroads in prospects for fresh steel tonnage early next year. Despite the fog that now besets the implement industry, steel companies feel certain that early 1931 should give them opportunity to help gird an increasingly steel-clad agriculture.

In the West, the freight car shops are as barren of orders as they are low in operating schedules. Dust has been settling in most of the builders' plants since late July or during August. Car repair work for the railroads has dwindled to the vanishing point, although sporadic resumption of work in western railroad's shops is noted.

Minor additions to its tank car fleets for leasing purposes are being turned out by General American Tank Car Corp., at Indiana Harbor. This provides only a marginal working schedule. Pullman is assembling finished steel and other products at its Michigan City, Ind., works for the start of production on the Chicago Great Western box cars soon.

Actual Car Steel Needs Light; Rail Orders Lagging

Vague reports in the last few days that a total of 50,000 freight cars will be built for 1931 delivery are being treated with more than mild interest. Yet, with only 2500 to 3000 cars before the market and scarcely a single railroad car being built in the United States, the car shop outlook as a source of steel buying is not promising.

Approximately 150,000 tons of rails were entered on western mill books early this month. A part of this tonnage is to be rolled in December. Apparently the December rolling will be small, although the figures are not definitely ascertained.

A year ago, virtually all of the western railroads had ordered their season's rails. This year only six roads have ordered, and the district's rail mill capacity is only 25 to 30 per cent engaged.

A year ago, rail mills were booming at 80 per cent. Some of the roads, however, are ordering as much tonnage as a year ago, or at least are placing that much tonnage with the rail mills at Indiana Harbor and Gary. The total is expected to be from 200,000 to 300,000 tons lower, and the carriers are much slower in issuing inquiries.

Car Loadings Light, but Much Grain Remains

With 40 to 50 per cent of this year's wheat crop yet to be moved, western freight loadings are a continued source of disappointment. The tense retrenchment policies of the western carriers as to material orders are loosening only gradually.

In commodities other than grain, losses in revenue freight are variable. Several roads are recording gains in their grain movement. The Burlington line's increase of 100 per cent in commodities loaded west of the Missouri river in the first half of November was due almost entirely to heavier grain shipments.

The bulk of the western corn crop yet is to be moved, despite the fact more was shipped in the last two months than ever before at this season. This crop not only is in much heavier volume than had been expected, but, well seasoned and dried through the long drought, it is of superior quality.

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Approaching a task that is blind guess-work at this season, the implement works are seeking to gear production schedules for the 1931 season at some point that will approximate the vagaries of demand. It is not expected that production of some items will meet actual demand closer than 20 per cent, as that much carry-over often is found to exist.

Setting production schedules for thresher-combine output particularly is difficult. A number of plants turn four different models a season off their assembly lines, and plant set-ups usually are for only one size at a time.

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Next summer's production of at least one of these combine lines should start now, but many of the machines will not be purchased by the grain farmer until the last minute. Even the dealers are gaging their call for stocks by what they feel sure represents actual demand and no more.

Inventory losses incident to such conditions in some other industries would be unspeakable, yet the slow turnover of capital in the implement lines is no reflection whatever on the implement industry but upon what it is forced to endure.

Implement Makers Hold Back Work for Winter

Meanwhile, the implement makers move with measured tread in swinging into the season's production. International Harvester Co., in order to provide employment for its forces in the Chicago district during the expected lean winter months, has been holding back on some of its schedules until cold weather.

Its own storage facilities exhausted, the company's overhead has been increased by the necessary rental of further storage space at its Rock Island, Ill., tractor works, where, with 1500 men on a three-

day schedule, it is turning out 80 tractors a day, largely to relieve unemployment.

This plant is expected to increase production materially after New Year's, but it is questionable whether it will reach its peak of 250 units a day for some months.

John Deere has put on 500 men at East Moline, Ill., on a three-day basis, but is starting on a heavier schedule at its Waterloo, Iowa, tractor wheel works, built last summer, after a shutdown of three weeks.

Schedules Variable, but Generally Are Downward

Oliver Farm Equipment Co. still is going at near capacity at Charles City, Iowa, and at Battle Creek, Mich., but its South Bend plant is operating on a two to three-day schedule. Minneapolis-Moline Power Implement Co. has had its plants in the Northwest operating about three days for more than two weeks after being down entirely for awhile.

J. I. Case Threshing Machine Co., at Racine, Wis., is operating a little heavier at about three days, and is completing its new foundry there.

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Machinations of the federal farm board in the wheat market are being dragged as a red herring across the trail of the implement horizon by those inclined to take a depressed view of things. The implement industry is inclined to withhold criticism and to give the co-operative farm marketing act a chance in the interests of a better organized agriculture.

Nevertheless the implement maker probably is a little less optimistic than the producer who sells him materials. A vice president of one of the leading implement works estimates a "restricted" volume for next year's business, but gives assurance that dividends on his company's common stock will be more than earned.

Recent rumors that a price war in tractors would develop because of the $75 reduction in prices on tractor models by Ford of Canada are generally denied.

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Engineering plans for the proposed subway for Chicago are nearly completed, but many obstacles present themselves before work can proceed. Not the least of these is final approval by the board of local improvements and traction companies.

Transportation engineers have been making interesting findings in a survey of the probable effects of private automobiles 20 years hence on the earnings of the street cars, subways and elevated lines.

The findings are of more than local interest as they present expert opinion on the number of automobiles to be marketed in the Chicago district between now and 1950. The survey shows that the automotive industry should market in the next 20 years more than twice the number of automobiles in Chicago territory than were bought in the last 22 years.

The engineers predict that in the next 20 years, Chicago sales of passenger automobiles will be 1,889,407, compared with 792,490 in the last 22 years. During the next two decades, at the average wholesale price per passenger car in 1928, Chicago should spend more than $1,100,000,000 for automobiles.

If Cook county is taken as the sales territory of Chicago automobile dealers, the aggregate sales of all passenger cars, used and new, should approximate $1,750,000,000, the engineers say.

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Chicago proponents of the 9-foot Illinois waterway as a linking channel in the Lakes-to-Gulf navigation project cite numerous advantages to be gained also by other Great Lakes ports. The Gulf waterway will not end at Chicago, they say, as Chicago only will be a breaking point in the route.

It is pointed out that the Milwaukee producer of electrically welded steel pipe for oil and gas lines will be able to reach its southerly and southwestern markets much more cheaply with water shipments of finished pipe.

Also, the Detroit automobile industry, which has been said to show interest in water transportation to the interior valley, is regarded as a large potential patron.

The Michigan, Indiana and Wisconsin ports on Lake Michigan are certain to benefit, it is added, and about 100 ports on Lake Michigan alone might be served, besides Chicago and down-river points.

Canal Clash Revived by Youngstown and Pittsburgh

Controversy over the waterways problem in the midwest steel industry was revived by delegations from the Youngstown, O., and Pittsburgh districts at the Mississippi Valley association convention held Nov. 24-25 at St. Louis.

The Youngstown group, composed of businessmen, steel leaders and bankers, asked the convention to endorse canalization by the federal government of the Mahoning, Beaver and Shenango rivers to afford these valleys a water outlet to the Ohio river. They assert opening of this waterway would place their mills on an equal footing with Pittsburgh steel mills which now have the Ohio, Monongahela and Allegheny rivers for shipment of raw and finished material.

The Pittsburgh delegation of leaders in the steel and banking fields demands endorsement of a complete Ohio river-Lake Erie canal by way of the Beaver and Mahoning rivers, or no canal. This project, from long study, would probably cost $120,000,000, whereas the tri-rivers proposition is claimed would cost about one-third that amount.

Dividends Are Brightening Financial Reports

Virginia Iron, Coal & Coke Co., Roanoke, Va., has declared a $12.50 dividend on its $5 preferred, due to accumulations for 1929 and 1930 and for the semiannual period ended Jan. 1, 1930. Dividend is payable Jan. 2 to record Dec. 15.

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Gardner-Denver Co., Quincy, Ill., in the ten months ended Oct. 31 had a net profit of $751,967 after all charges equal after preferred dividends to $3.35 a share on the common stock, as against $1,268,096, or $5.91 a share in the similar period last year. October net profit amounted to $31,599.

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Federal Screw Works, Detroit, reports loss of $49,862 for third quarter, against net profit of $235,344, or $1.48 a share in third quarter, 1929.

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Continental Steel Corp., Kokomo, Ind., has declared its regular quarterly dividend of $1.75 a share on preferred stock, payable Jan. 1 to record Dec. 18.

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Allegheny Steel Co., Pittsburgh, has declared an extra dividend of 50 cents a share on its common stock in addition to two monthly dividends of 15 cents each.

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Michigan Steel Corp., Detroit, reports net income for nine months ended Sept. 30 of $639,530 equal to $2.66 a share, compared with $1,689,888, or $7.68 a share last year. Third quarter: $11,094, or 4 cents a share, compared with $509,888, or $2.32 a share, last year.

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Canadian Car & Foundry Co., Montreal, reports for the fiscal year ending Sept. 30 showed operating income of $3,245,119, compared with $3,922,133 for the previous year. After all deductions there remained $2,693,119 for dividends.

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Noblitt-Sparks Industries Inc., Indianapolis, manufacturer of metal tubing, reports for the first ten months net profit of $468,246.89, or $5.88 a share. This represents a decline of 22 per cent from the same period of last year.

EDITORIAL

Wanted: A Co-ordinated Transportation Plan

AMONG the major problems confronting industry none is more important or more difficult of solution than that of transportation. Money is cheap and abundant, the cost of materials is low, high wage rates are offset by the satisfactory productivity of labor and almost all other items of expense either are low or are amenable to control. But freight rates continue high!

While the problem is national in scope, it is of particular concern to the producers, fabricators and users of steel. In the past 50 years the railroads have purchased more rolled steel and more equipment than any other customer of the steel mills or of the equipment manufacturers. And similarly, these mills and manufacturers rank high as steady and profitable patrons of the railroads. Because of this reciprocal relationship, the steel producing and manufacturing interests must take a broad and liberal attitude toward the transportation problem. A solution which assures low rates for shippers at the expense of the railroads would be no solution at all. And an arrangement guaranteeing reasonable profits to the carriers but continuing to impose a heavy burden on shippers likewise would be unsatisfactory.

What shall be done? What can be done?

Present System Imposes Unnecessary Burden on Freight Shippers

The present transportation system can be condemned on the following counts:

1. The cost of shipping by rail is too high for the service rendered.
2. Freight rates, while excessive to shippers, do not assure an adequate profit to the carriers.
3. Operating efficiencies developed by the railroads do not offset the wastes incurred by the enforced operation of poorly located lines and by unnecessary duplication of services.
4. Railroads are deprived by law of the benefits which would result from the co-ordination of the various transportation agencies including waterway, motor highway and city street transportation.
5. Canalization of inland waters and expansion of highways are encouraged, entailing added expense for the railroads and furnishing uncontrolled competition against them.

It is clear that lower rates depend upon increased over-all efficiency of the entire national system of transportation. This efficiency in turn must come from co-ordination of the railroads themselves as well as co-ordination of the rail services with lake, river and canal craft; electric interurban lines; intercity motor truck lines and certain city services. And finally this co-ordination is dependent upon enabling legislation.

Our representatives at Washington have been considering several plans for railroad consolidation. Their efforts are pointed in the right direction, but in the final analysis consolidation of existing roads is only a preliminary step to co-ordination. If the other phases of co-ordination require as much time in the halls of congress as has already been devoted to consolidation, a satisfactory solution will not be forthcoming for several decades.

Now Is Time To Press for Early Solution of Railroad Problem

Industry cannot wait for a leisurely consideration of the transportation problem. It cannot afford to continue to pay hundreds of millions of dollars annually that would not be necessary if the various transportation agencies were being developed in accordance with a basic plan. The existing practice of regulating railroads while every other form of transportation service is permitted to develop haphazardly and without regard to the rights or interests of each other not only is bad for the carriers, but it is inimical to the welfare of industry. Further delay is harmful.

First of all, government regulation as administered through the agency of the interstate commerce commission should be revamped to accord with present conditions. Since the time the commission was established important changes have occurred which present problems beyond the authority of that body. What we need is legislation that recognizes the merits of all methods of transportation and permits the development of each according to its ability to serve. The railroads, motor truck lines, interurban systems, waterways and pipe lines all should be considered part of a co-ordinated transportation plan.

American industry should lose no time in serving notice on Washington that the present lack of co-ordination in transportation is a disgrace and that remedial action should take precedence over all other problems of government control of business.

Profits of Steel Producers for Nine Months Below Average for All Industries

AS EXPECTED, corporation earnings for the third quarter fell below those of the first and second quarters. According to the compilation prepared by Ernst & Ernst, accountants and auditors, aggregate profits for 271 industrials for the first nine months of 1930 were 36.28 per cent less than in the corresponding period last year. Of 26 industrial groups only three showed greater profits this year than last: Amusement companies, 27.96 per cent; restaurant chains, 5.91 per cent; and beverages and confections, 5.15 per cent more.

All of the industrial groups related to steel showed lower profits. Manufacturers of railroad equipment are fortunate in that their profits for nine months of 1930 are only 12.44 per cent below those of the comparable period last year. Profits of other groups range all the way from this gratifying showing to a drop of 72.23 per cent, which was suffered by 12 companies engaged in mining and smelting. Builders of automobiles and manufacturers of automobile parts and accessories—who normally take a fifth of the steel production of the country—report profits more than 50 per cent lower than last year.

The detailed figures for 14 selected industrial groups follow:

Profits for 9 Months, 1930, Compared With Those of 9 Months, 1929

	Number of companies reporting	Number reporting increased profits	Number reporting decreased profits	Per cent decrease in profits of all companies
Automobile manufacturers	10	1	9	51.98
Automobile parts and accessories	27	2	25	50.27
Building supplies	14	1	13	27.41
Business equipment	8	2	6	33.42
Chemicals	14	1	13	20.92
Coal mining	4	0	4	60.26
Electrical household equipment	3	0	3	63.90
Steel and iron	18	1	17	45.96
Machinery and tools	14	1	13	22.94
Metal products—sundry	11	1	10	54.52
Mining and smelting	12	0	12	72.23
Oil producing and refining	24	7	17	33.66
Railroad equipment	5	2	3	12.44
Textiles	6	1	5	61.76
Total industrials*	271	57	214	36.28

*Includes many groups not included above, such as amusements, bakeries, cigars, clothing, merchandising, etc.

It will be noted that the position of steel producers and equipment manufacturers in relation to the average for all industrials has changed considerably since the middle of the year. When the first-half figures were published in STEEL (Sept. 18 issue) the profits of steel producers were 32.34 per cent off from 1929 levels, while profits from all industrials were 31.61 per cent lower. From this position of near parity, steel profits for nine months have dropped far more than those for all industrials. Steelmakers' profits for nine months are down 45.96 per cent while those for all industrials are 36.28 per cent lower. Comparisons for six months and nine months follow:

Per Cent Decline in Profits in 1930 Compared With 1929

	6 months	9 months
Automobile manufacturers	48.81	51.98
Automobile parts and accessories	44.95	50.27
Building supplies	24.78	27.41
Business equipment	27.39	33.42
Chemicals	19.31	20.92
Coal mining	33.12	60.26
Electrical household equipment	63.79	63.90
Steel and iron	32.34	45.96
Machinery and tools	14.17	22.94
Metal products—sundry	40.26	54.52
Mining and smelting	60.97	72.23
Oil producing and refining	27.13	33.66
Railroad equipment	5.82	12.44
Total industrials*	31.61	36.28

*Includes many groups not included above.

Companies classified under "machinery and tools" suffered a reduction of only 14.17 per cent in first-half profits, but for three quarters the drop is 22.94 per cent. The group known as "metal products—sundry" appears to have suffered heavily during the third quarter. On the other hand the two automotive groups and the manufacturers of electrical household equipment—whose profits depend largely on sales direct to the consuming public—experienced only slight reductions.

In studying the above table, allowances should be made for the fact that more companies are represented in the percentage for six months than in the record for nine months. However, the results are believed to reflect the approximate relation of profits for the two periods.

In the Ernst & Ernst report three months ago inventories as of June 30 were said to be 6.5 per cent below those of June 30, 1929. In the latest report inventories on Sept. 30, 1930, were 12 per cent below those of Sept. 30, 1929, when excluding General Motors Corp. and 23 per cent below including that company.

THE BUSINESS TREND

Sentiment Is Improving, But Business Still Lags

BUSINESS is entering a period of the year when a seasonal let-down in activity usually occurs. Ordinarily production schedules, volume of freight traffic and numerous other indicators of the pulse of industry drop gradually in the latter part of November and through December. This fact should be taken into account by those who attempt to interpret the events of the remaining few weeks of 1930.

There are signs of resistance in some departments of business to the usual seasonal relapse. Freight car loadings have declined in the first two weeks of November, but if this marks the beginning of a gradual drop, it started several weeks later than in 1929. The record of loadings for the week of Nov. 15 will assist in determining whether the drop during the week ending Nov. 8 was due to election day influences or whether it was caused by seasonal factors.

While several automobile builders are reducing their modest schedules, these losses are more than offset by the increase by Chevrolet from irregular activity to a program of 14,000 units weekly. It is quite possible that automobile production for the month of November will exceed that of October, which was at an almost rock bottom level. An increase would be contrary to usual experience.

Building construction, while continuing at disappointing pace, is not expected to dip proportionately to the usual seasonal trend. This is especially true of residential construction, which gained in October notwithstanding the fact total construction awards, measured on a square footage basis, declined.

Production in Most Lines Continues To Drop Off Moderately

In the meantime production in many lines continues on its gently declining trend. The weekly operation reports of the steel industry show that steelworks are at less than 45 per cent of capacity. The steel ingot output for November seems likely to go lower than that of October.

From the foregoing it is apparent that the favorable and unfavorable factors are not suf-

The Barometer of Business

Industrial Indicators

	October 1930	September 1930	October 1929
Pig iron output (Daily average, tons)	69,851	75,893	115,747
Machine Tool Index	113.3	113.6	287
Unfilled orders, tons	3,481,763	3,424,338	4,086,562
Ingot output (Daily average, tons)	100,756	110,307	167,098
Dodge Bldg. awards in 37 states (sq. ft.)	39,483,700	41,193,300	65,609,200
Automobile output	156,700*	226,361	217,441
Coal output, tons	44,337,000	38,632,000	52,174,000
Business failures; number	2,124	1,963	1,882
Business failures; liabilities	$ 56,296,577	$ 46,947,021	$ 31,313,581
Cement production, Bbls.		16,124,000	16,731,000
Cotton consumption, bales	444,494	394,321	639,759
Car loadings (weekly average)	954,446	931,310	1,169,850

*Estimated

Commodity Prices

	Oct., 1930	Sept., 1930	Oct., 1929	Monthly average—1913
Steel's composite average of 14 iron and steel prices	$32.26	$32.65	$36.23	$26.32
Bradstreet's index	$10.06	$10.30	$12.40	100
Wheat, cash (bushel)	$ 0.99	$ 1.01	$ 1.43	92c
Corn, cash (bushel)	$ 1.01	$ 1.09	$ 1.11	51c
Petroleum, crude (Bbl.)	$ 1.08	$ 1.18	$ 1.40	$ 2.50

Financial Indicators

	October 1930	September 1930	October 1929
25 Industrial stocks	$242.95	$219.73	$261.88
25 Rail stocks	$97.95	$106.55	$119.52
40 Bonds	$86.34	$88.49	$84.40
Bank clearings (000 omitted)	$ 44,983,152	$ 39,911,018	$ 78,207,086
Commercial paper rate N. Y., per cent	3	3	5¾
*Commercial loans (000 omitted)	$ 8,707,000	$ 8,446,000	$ 9,743,000
Federal Reserve ratio, per cent	81.6	80.8	7.0
Railroad earnings**	$104,078,334	$ 95,603,922	$133,898,000
Stock sales, N. Y. stock exchange	65,497,479	53,545,145	141,668,410
Bond sales, par value	$267,745,150	$226,411,100	$347,225,000

*Leading member banks Federal Reserve System.
**September, August and September.

Foreign Trade

	October 1930	September 1930	October 1929
Exports	$328,000,000	$318,000,000	$528,514,000
Imports	$248,000,000	$227,000,000	$391,063,000
Gold exports	$ 9,267,000	$ 11,135,000	$ 3,805,000
Gold imports	$ 35,635,000	$ 13,671,000	$ 21,321,000

Foreign Exchange

	Normal	October 1930	September 1930	October 1929
Sterling	$4.86	$4.86	$4.86	$4.85
Francs	3.918c	3.92c	3.925c	3.92c
Lira	5.260c	5.23c	5.232c	5.23c
Marks	23.830c	23.78c	23.825c	23.86c

ficiently pronounced to indicate a definite trend. In spite of this uncertainty, business sentiment is improving daily. Much of the better feeling may be traced to the growing conviction that the price situation will be clarified soon.

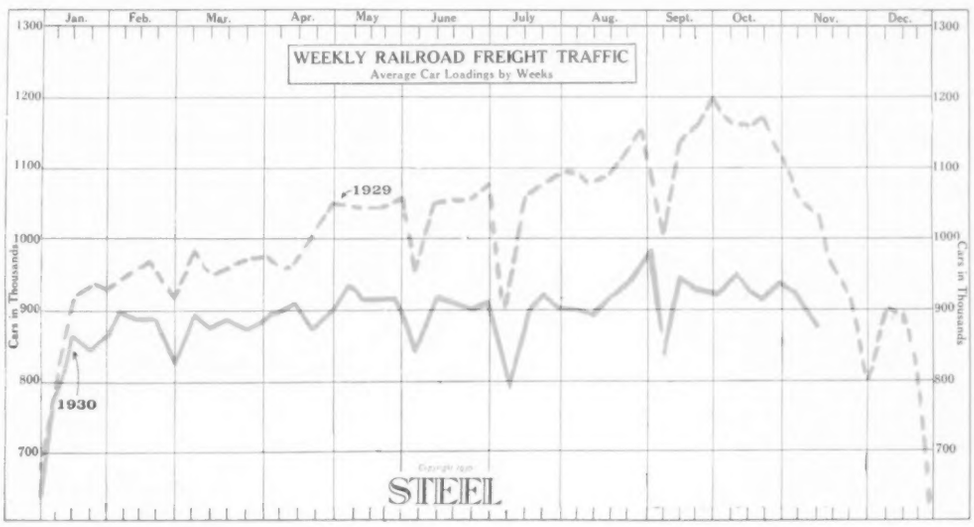
The indices of commodity prices, which for six weeks or more have been fluctuating within a narrow range at low levels, now are more nearly stationary than at any time since the decline started. Irving Fisher's index has stood at 82.2 for two weeks. STEEL's composite of 14 steel and iron products remained at $31.98 for two weeks in November and then on Nov. 19 dropped to $31.86. Its downward trend seems to be at or near the end, especially in view of the apparent stability of the important steel products—bars, shapes and plates.

During the past few weeks the price problem has received the attention of the ablest authorities in the steel industry. As a result of conand that once this is settled, business will recover gradually.

Inasmuch as similar predictions were made late last summer—only to be proved false by the relapse in October—business men are reluctant to place too much hope on forecasts. Even if a moderate recovery were to manifest itself in the next month or two, we would be justified in refusing to accept it as the real start of an upward trend until it had grown to convincing proportions. In a series of ups and downs which characterizes the bottom of a depression, it is difficult to determine the low point and likewise the real beginning of recovery until several months after the turn has been passed.

Therefore it is well to refrain from jumping to conclusions. In fact, it would be far better if business men would take their minds from the present situation for a moment and con-

1930	
Nov. 8	881,401
Nov. 1	934,640
Oct. 25	959,335
Oct. 18	931,085
Oct. 11	954,874
Oct. 4	972,492
1929	
Nov. 8	1,048,968
Nov. 1	1,072,234
Oct. 25	1,134,359
Oct. 18	1,185,564
Oct. 11	1,179,540
Oct. 4	1,179,047



structive influences all along the line, there seems to be more support for stabilized prices than heretofore.

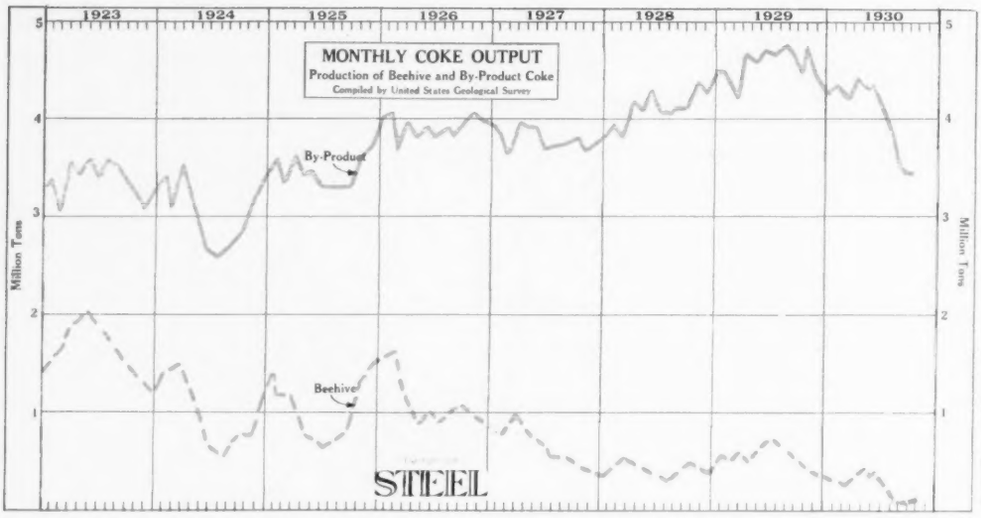
The copper market has been going through a hectic period in which the danger of trying to stimulate prices too ardently is emphasized. Prices leaped rapidly from 9.50c to around 12.00c. On the way up prices attracted domestic consumers, but at 11.00c they balked at further purchases. At this point foreign interests continued to buy up to 12.00c, when the market broke. The price has been battered down to 10.50c and the situation now is somewhat uncertain.

The experience in copper perhaps is characteristic of the jockeying which may be expected in many other commodities before the upward trend is clearly defined.

Business forecasters are becoming more insistent in their predictions that the turning point will materialize in the next few months. One authority declares the turn will come in December or January. Others are not as definite as to time, but all seem to agree that the commodity price situation is nearing solution centrate on the future. Before three years have passed, most companies will be so busy that the present slump will be but a memory.

Loadings of Revenue Freight Are Lower; Is Decline Seasonal or Otherwise?

Weekly statistics on car loadings of revenue freight are being watched with more than usual interest because the time is near when the record will show whether this year's traffic will taper off sharply, as it did last year, or whether business will hold well enough to carry loadings above last year's levels. In 1929, loadings in the month of November shrank from over 1,100,000 a week to 800,000 a week. This year, starting at 934,640 in the week ending Nov. 1, loadings dipped to 881,401 in the week of Nov. 8. Part of this decline is attributed to election day influences, but it is possible that the seasonal decline figured largely in the drop. The correct interpretation will be made easier when the figures for the week ending Nov. 15 are available.



By-Product

	Tons
October, 1930	3,431,529
September, 1930	3,401,417
October, 1929	4,610,138

Beehive

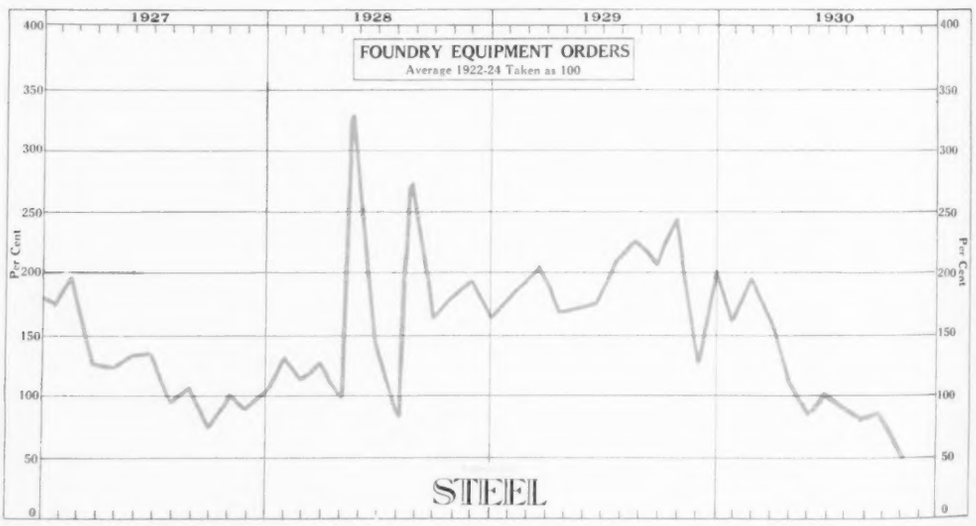
October, 1930	177,800
September, 1930	168,100
October, 1929	470,200

Total Coke Production Rate Drops as Stocks Cease to Make Gains

Production of coke during October again continued its downward rate, but stocks ceased to increase as in past months. Of the 3,609,329 tons produced, 3,431,529 tons were by-product and 177,800 tons were beehive. The month's total for both was 39,812 tons higher than that for September, but the daily rate declined 2.15 per cent. The average daily production of by-product coke dropped 2.7 per cent. However, this was partially offset by an increase of 1.9 per cent in the daily rate of beehive coke output. Unlike last month, stocks at merchant ovens decreased, and the drop was enough to offset an increase at furnace ovens, resulting in a net loss of 0.4 per cent in stocks on hand.

Orders for Foundry Equipment Sink to New Low Point

Foundry equipment orders, often subject to marked fluctuations, took a very decisive drop in October, after declining rapidly each month since last March, except for slight checks in June and September. The index of the Foundry Equipment Manufacturers' association, using 100 as the indicator for the average of the thirty-six months of 1922-24, went from 91.0 in September to 50.0, the lowest point reported in several years. October, 1929, with an index of 245.3, was the highest order month of last year. Shipments likewise fell off, going from 66.0 to 62.0, another new low. In October, 1929, shipments were 214.1. At the end of October, 1930, unfilled orders stood at 159.1.



Per Cent

	1930	1929
October	50.0	245.3
September	91.0	216.3
August	85.2	229.5
July	90.6	219.3
June	102.1	177.3
May	92.7	177.7

Production

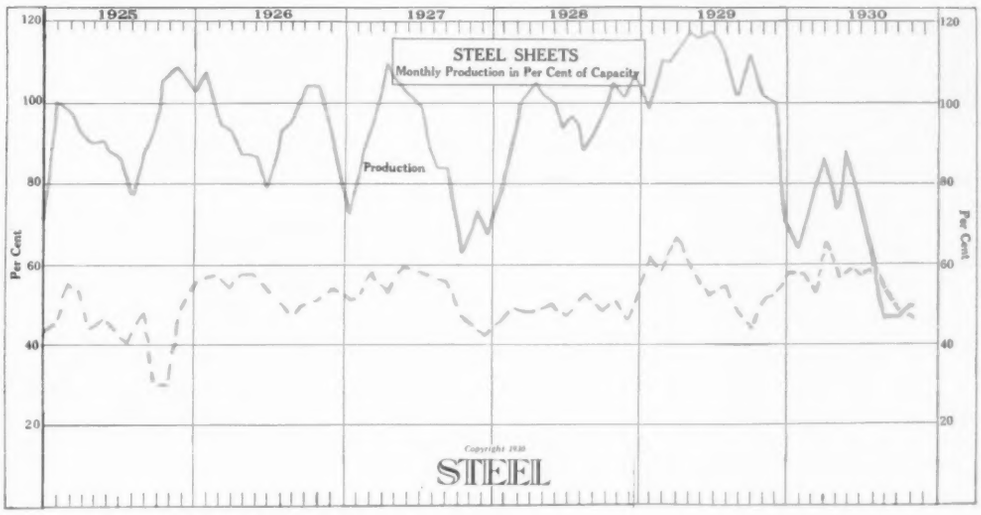
Per cent of capacity

	1930	1929
October	50.6	95.3
September	48.8	97.7
August	48.6	109.7
July	50.4	98.1
June	58.8	110.4
May	73.3	115.8

Stocks

Per cent of capacity

	1930	1929
October	49.4	50.5
September	50.4	50.1
August	50.9	42.9
July	54.9	46.9
June	57.3	53.5
May	54.7	49.4

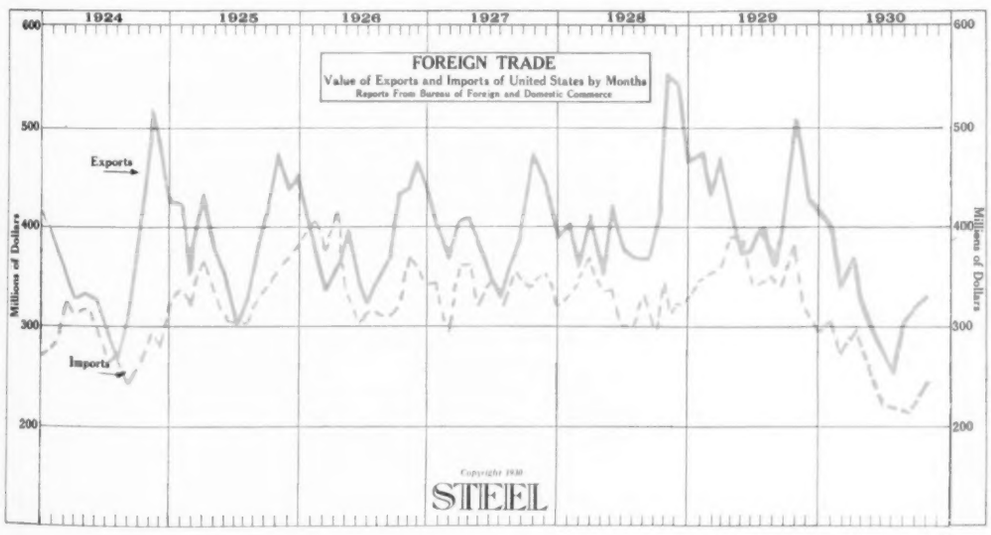


Independent Sheet Steel Output Turns Upward in October

Sheet steel output of independent producers, reported to the National Association of Flat-Rolled Steel Manufacturers, advanced from 48.8 per cent of capacity to 50.6 per cent of capacity during October, an increase of 7 per cent. Stocks continued their trend and went from 50.4 per cent to 49.1 per cent of capacity. Sales fell off 55,754 tons, or 25.9 per cent, compared with September, but sales in that month had been 43 per cent higher than in August. Shipments in October increased 6877 tons, reaching 193,516 tons, close to the production figure of 193,934 tons. Unfilled orders on October 31 were 83.4 per cent of capacity as compared with 105.5 per cent on September 30.

Foreign Trade in October Again Lags, Gaining Less Than Seasonal Rate

In October American foreign trade mounted at a moderate rate, imports gaining more than exports. Exports increased 5.1 per cent, being valued at $328,000,000 as compared with $312,014,000 in September. Imports went from $226,326,000 to $248,000,000 in October, a gain of 9.6 per cent. Last year in October exports were $528,514,000 and imports amounted to $391,063,000. The balance of trade for the month, $80,000,000, compares with a balance of $127,451,000 in the same month last year. During the month of October in the last five years, exports averaged $502,614,000, imports averaged $370,620,000 and the trade balance averaged $131,994,000.



EXPORTS

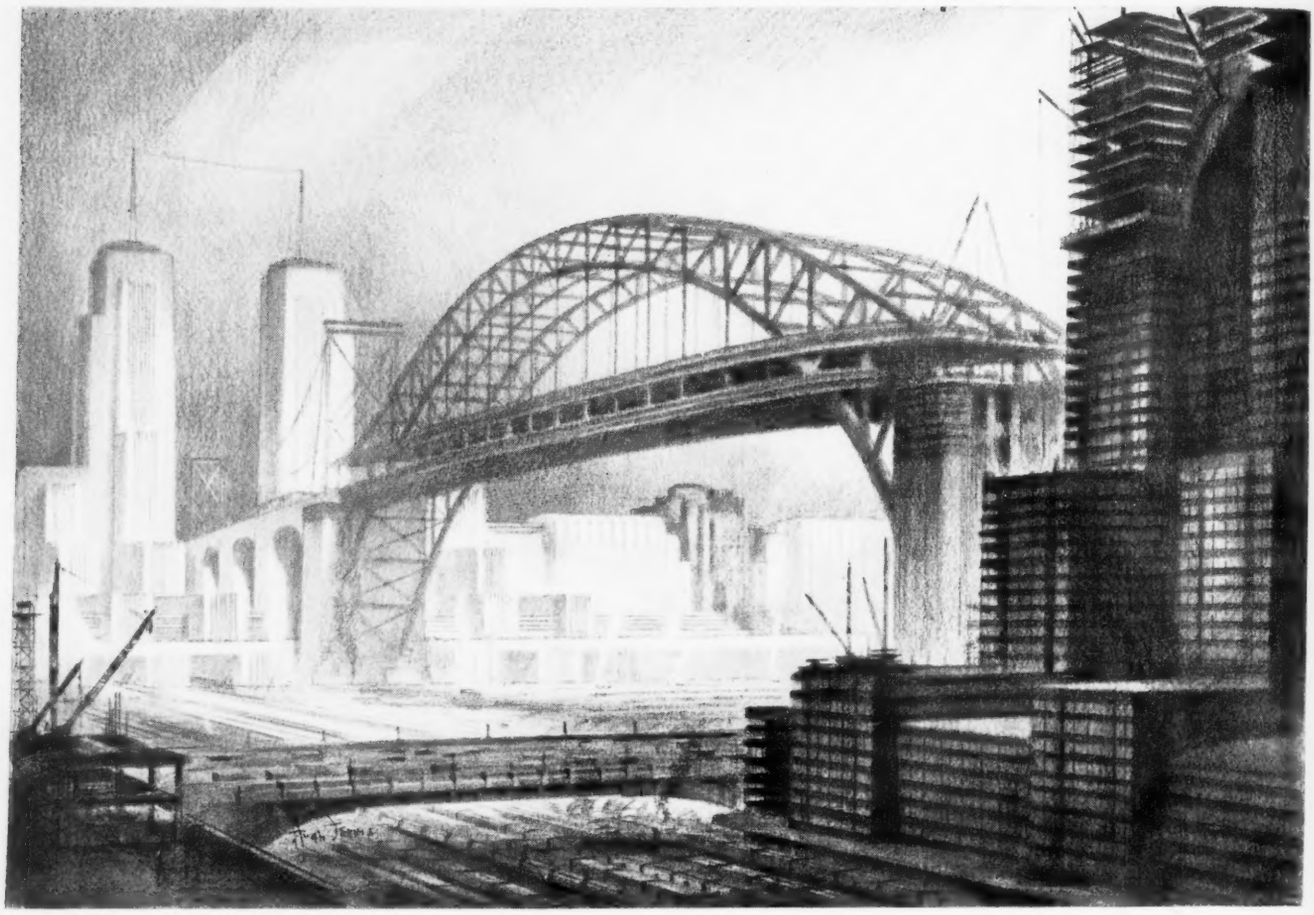
October, 1930	$328,000,000
September, 1930	312,014,000
October, 1929	528,514,000

IMPORTS

October, 1930	$248,000,000
September, 1930	226,326,000
October, 1929	391,063,000

STRUCTURAL STEEL CREATED THE SKYSCRAPER

TO INDUSTRY STEEL BRINGS BRAWN



"AN INDUSTRIAL DEVELOPMENT"—IMAGINATIVE DESIGN BY HUGH FERRISS. AN ENLARGEMENT, ON SPECIAL STOCK FOR FRAMING, WILL BE MAILED WITHOUT CHARGE TO ANY ARCHITECT, ENGINEER OR BUSINESS EXECUTIVE.

STEEL is the modern beast of burden . . . long proved best fitted to shoulder the world's work. In its clean, compact sinews is equal resistance to tensile, compressive and shearing stress. Steel, the strongest building material known to man, can have no hidden weaknesses . . . it is worked and reworked at the mills, rolled and rerolled, tested and tested again.

In industrial plants, steel withstands the incessant vibration of flashing machines and the changing stresses of constantly shifting loads. It is elastic and tough. It is the only material that can be depended upon to recover fully when loads are removed or shocks cease.

Steel offers the same great strength, resilience and permanence to small factories, to small apartment and mercantile houses, to homes, schools, and small as well as mammoth bridges. It saves building time, provides more floor space. It is most economically erected in any climate—any weather—wherever and whenever men can work.

Before building anything find out what steel can do for you. The Institute serves as a clearing house for technical and economic information on structural steel, and offers full and free co-operation in the use of such data to architects, engineers and all others interested.

The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City. Canadian address: 710 Bank of Hamilton Bldg., Toronto, Ontario. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas, San Francisco and Toronto.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

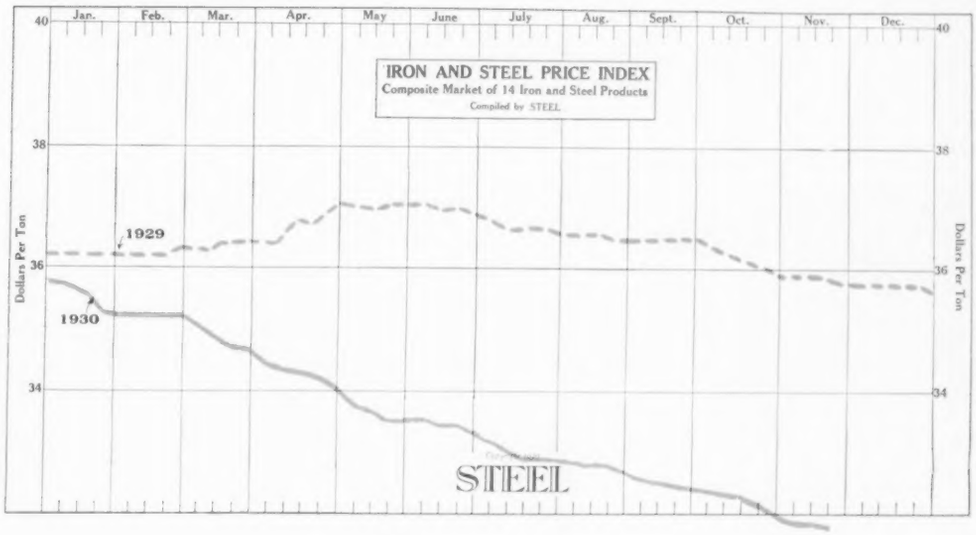
STEEL INSURES STRENGTH AND SECURITY

Weekly Figures

Nov. 19	$31.86
Nov. 12	31.98
Nov. 5	31.98
Oct. 29	32.06
Oct. 22	32.14

Monthly Averages

October, 1930	$32.26
September, 1930	32.65
August, 1930	32.99
July, 1930	33.21
October, 1929	36.23

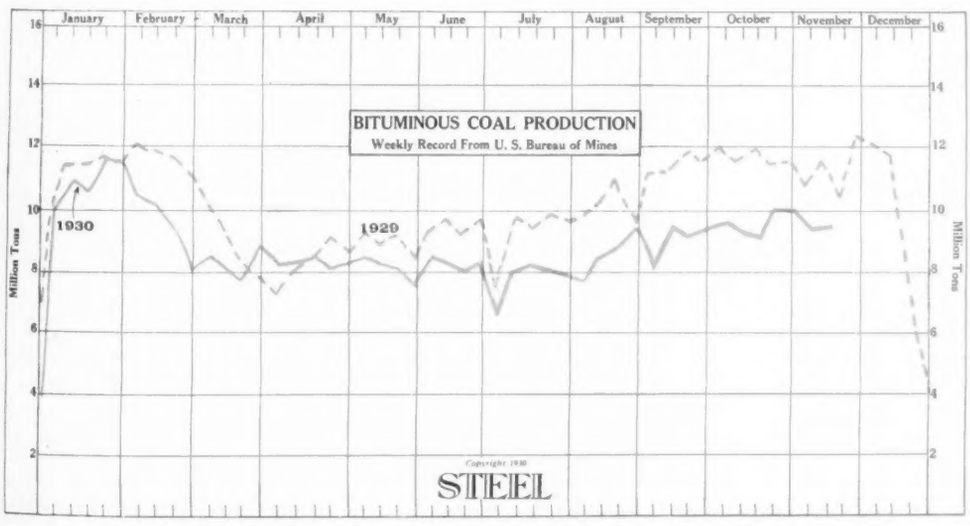


Composite of Steel and Iron Prices Drops to $31.86 as Stabilization is Attempted

Weaknesses which producers are trying to correct before the beginning of the first quarter of 1931 caused STEEL's composite of iron and steel prices to reach a new low of $31.86 on Nov. 19 after being checked temporarily at $31.98, the figure which prevailed on Nov. 5 and 12. The specific cause was a decline in galvanized sheets and wire nails. Apparently reconciled to the fact that little hope is in sight for increasing tonnages any more this year, makers are attempting to extend stabilization of prices to sheets, strip and wire, thus bolstering the general market in the manner in which bars, plates and shapes have been strengthened.

Production of Soft Coal Vacillates Before Approaching Seasonal Decline

Production of bituminous coal during the week ended Nov. 15, affected by Armistice day, made a very slight gain over the preceding week, going from 9,708,000 tons to 9,718,000 tons. During the week ended Nov. 8 one day was cut in half by elections, accounting for part of the decline from the total for Nov. 1, set at 10,145,000 tons. Thus the full force of the decline from Oct. 25, which was a high point for the latter part of the year, is somewhat modified. Last year production dropped in the third week of November, rebounded to a high point, and then tapered off with a precipitate seasonal decline to the end of the year.



Thousands of Tons

	1930	1929
Nov. 15	9,718	10,740
Nov. 8	9,708	11,285
Nov. 1	10,145	11,266
Oct. 25	10,453	11,625

STEEL AND ELECTRIC HEAT

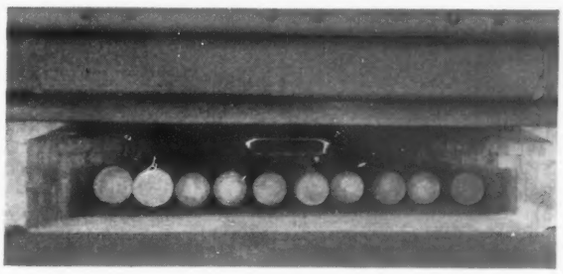
ACCURATE control of temperatures, uniformity of results and attendant cleanliness are factors making a strong bid for the use of electricity in the heat treatment of steel. The third of these advantages, cleanliness, is noticeable in the illustration above, a new heat-treating shop of the Bethlehem Steel Co. in which electric furnaces and equipment are used exclusively. The design of the building affords more than the usual amount of light for industrial plants.

Electric Heat Treating Setup Insures Uniformity and Cleanliness

BY S. D. GLADDING

Superintendent of Lehigh Mills, Bethlehem Steel Co.

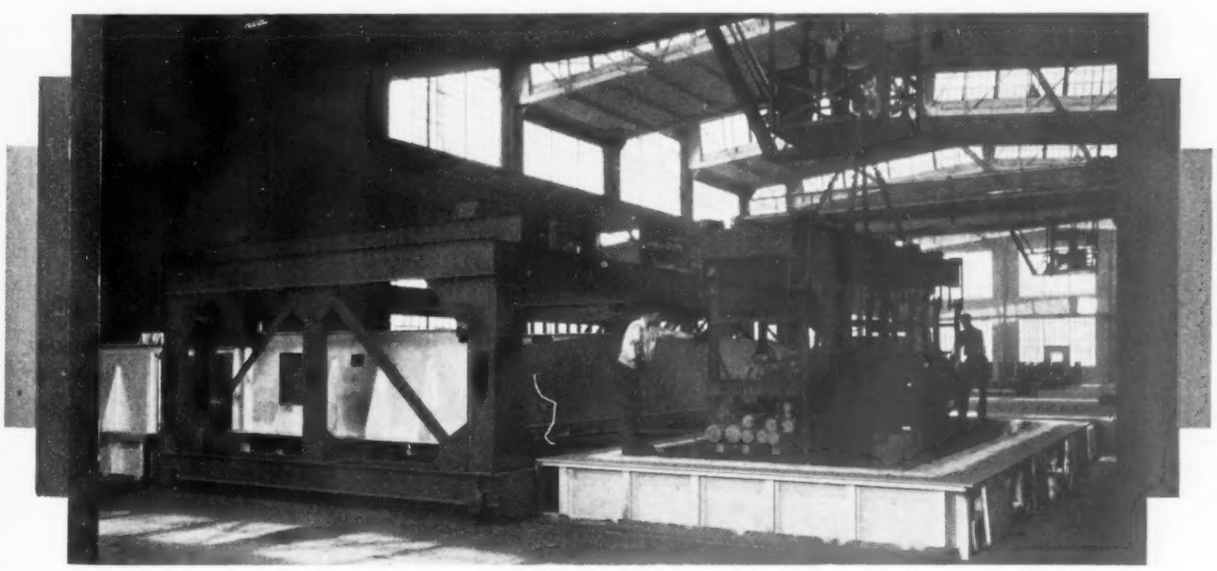
RECOGNIZING the utility of electric heat in the treatment of bars, Bethlehem Steel Co. recently has installed an electric heat treating shop in its Bethlehem, Pa., plant. Accuracy, ease of application and uniformity are obtainable in marked degree through this modern equipment which may be regarded as a distinct advance in the heat treatment of alloy and carbon bars. The electric heat treating plant was built to meet the demands of modern markets where specifications are increasingly more and more rigid, and to satisfy demands on a sizable production basis.



A charge of bars in the high-temperature chamber of the roller-hearth furnace

Bars of any section from ¼-inch to 8 inches inclusive, and any length up to and including 25 feet can be normalized, annealed, quenched and tempered. Bars of any composition can be treated uniformly to meet physical properties consistent with quality and section. This recent installation is housed in a new building constructed to provide the maximum amount of daylight through windows in the roof, sides and end walls, a notable advance in practice over older heat treatment shops in the industry. The plant is designed for the most rapid routing of bars through the shop consistent with good heat treatment practice, and the sequence of operation was given every consideration before the layout was approved.

Bars loaded on standard gage cars come from the rolling mills into one end of the building, where a track long enough to hold three cars has been provided. The bars in bundles



Two electrically heated pit annealing furnaces, showing a charge being lowered into one

IN THE background of the illustration to the left is a charge on the crane ready to start the quenching cycle; in the foreground a charge already quenched is shown on the unloading skids. Below, the quenching crane is in position to receive a charge. Note the horizontal arms or hooks at the bottom of the crane which fit in between the rollers; also the mirror-like surface of the water in the quench tank at the right

first are unloaded from the cars by a 20-ton overhead crane and placed either into the furnace or in storage racks to await their turn to go into the furnace.

Next in line of operation is a roller-hearth furnace for normalizing or heating for quenching. This furnace consists of two chambers, end to end; the first is a preheating chamber operating at 800 degrees Fahr. and the second a high-temperature chamber which operates at the desired temperature for quenching or normalizing. Each of these chambers is 29 feet long and 5 feet wide inside. There is one continuous roller line, driven by a single motor, through the preheating chamber, the high-temperature chamber and the discharge, along the side of the quenching tank, on which the bars are run out to be quenched or normalized. The outgoing end of the preheating chamber and both ends of the high-temperature chamber are provided with doors to allow the work to pass. The furnace has capacity to heat 6000 pounds per hour of 3-inch round bars 25 feet long to a temperature of 1650 degrees Fahr. A charging mechanism is provided for the preheating chamber, having space for two loads of material, while a lift door is provided on one side of the preheating chamber which, when raised, will allow a charge to be placed automatically on the rolls in this chamber.

At the discharge roller line of the high-temperature chamber a crane is provided to lift the work off the roller line and place it in the quenching tank. The control of this crane is arranged so that it automatically places the bars in the quenching tank, raises and lowers them to avoid steam pockets and to give a more uniform quench.

The length of time in the quenching medium is controlled by a time switch, so that when the time is up the crane lifts the bars out of the tank and places them on unloading skids; then the crane automatically returns to its original position ready to take the next discharge. In case the bars are to be normalized, the control is arranged with a double-throw switch, so that the crane will lift the bars off the discharge roll table and deposit them on the unloading skids, by-passing the quenching tank.

Quenching Tank Cooled

Either water or oil may be used in the quenching tank. The sides and ends of this tank are surrounded with 2-inch pipes through which cooled water is circulated, so that the quenching medium is never above room temperature when a quench is made.

A charge of bars consists of the number of bars it will take to spread across the roller line, without having one bar on top of another. The equipment is designed to take a charge of 26,000 pounds, equivalent to six bars 8 inches in diameter, 25 feet long. The roller line through the furnace is connected so that when a charge is being heated the rolls oscillate back and forth 180 degrees eight times per minute. Since the same spot on any bar is never in contact with the supporting rolls more than ⅛-minute at any time during the heating-up operation, the possibility of cold spots, always present in any continuous furnace, is eliminated, and an absolutely uniform heat throughout the length of the bar is provided.

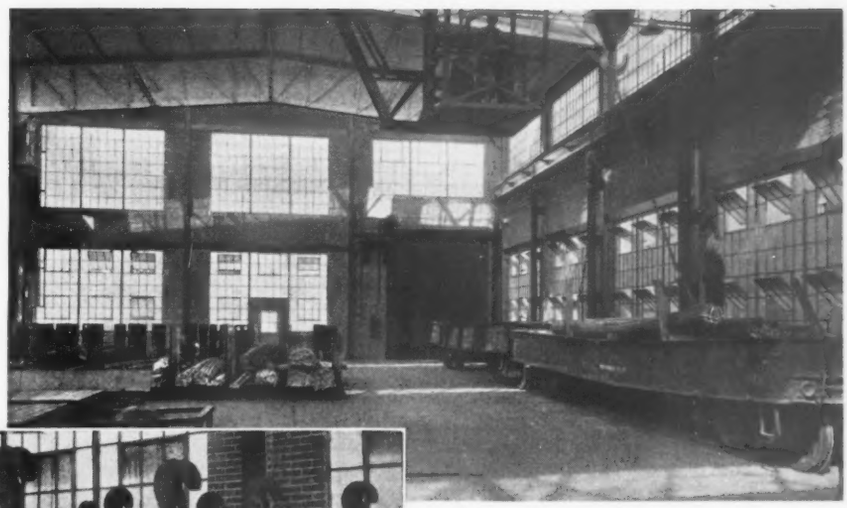
All operations are controlled automatically from a master timing switch, adjustable over a wide range for different sizes of stock which require different time intervals in the furnace. A charge is placed in the preheating and high temperature chambers, when starting with hand-operated switches; the sequence of operation then is as follows:

1. End doors raise.
2. Roll table starts forward.
3. Roll table stops when charge has been run out. At the same time the crane for quenching starts to lift and the mechanism for placing a charge in the preheater starts to operate. When the charge is run out of the high-temperature chamber, the charge in the preheater is run into the high-temperature chamber.
4. End doors close.

The operations of quenching and charging the preheater take place at the same time. The sequence of quenching is:

1. Crane lifts charge from roll table.
2. Crane travels over to quench tank.
3. Crane lowers charge in quenching medium and oscillates up and down by limit switches for a definite time, determined by a timing relay which is set for time desired in quenching fluid.
4. Crane raises material out of

BARS loaded on standard-gage railroad cars come from the rolling mills and are unloaded into racks by a 20-ton overhead crane, as shown at the right. Below are shown the special racks used to charge material into the pit annealing furnaces. The racks are of heat-resisting steel construction



quenching fluid and travels over to unloading skids.

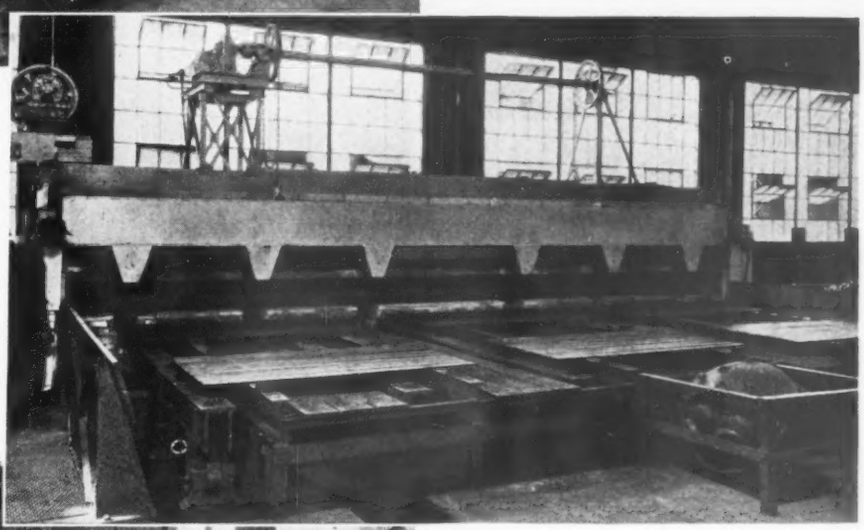
5. Crane lowers material on unloading skids.
6. Crane returns to original position.

The sequence of operation of the charging mechanism charging bars in the preheating chamber is as follows:

1. Side door raises.
2. Bars are raised off loading rack.
3. Charging carriage advances, carrying bars into furnace.
4. Charging carriage lowers, depositing bars on rolls inside preheater.
5. Charging carriage moves out of preheating chamber.
6. Side door closes; then roller line in furnace starts to oscillate through 180 degrees.

With this layout the time required to get the bars out of the furnace and into the quenching medium is 5 to 6 seconds, so that the drop in temperature of the bars is practically negligible.

The preheating chamber of the furnace is constructed with brick walls



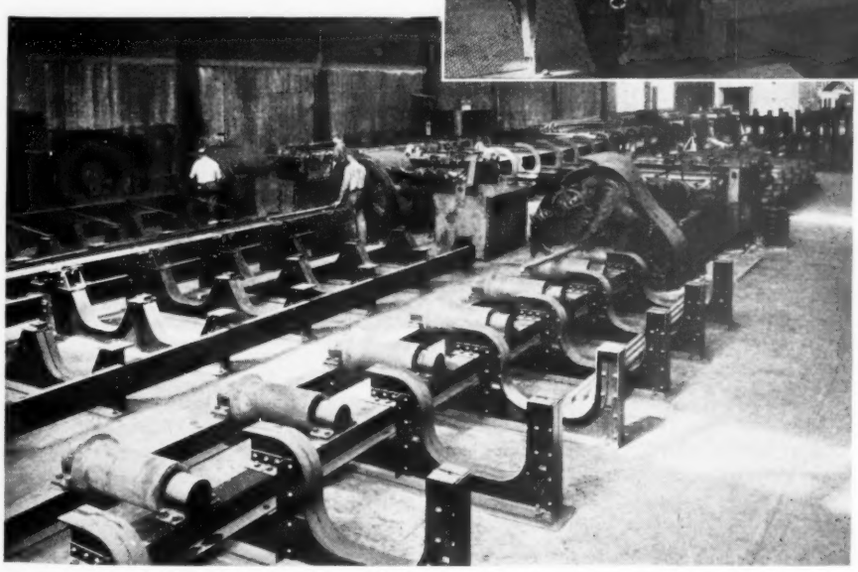


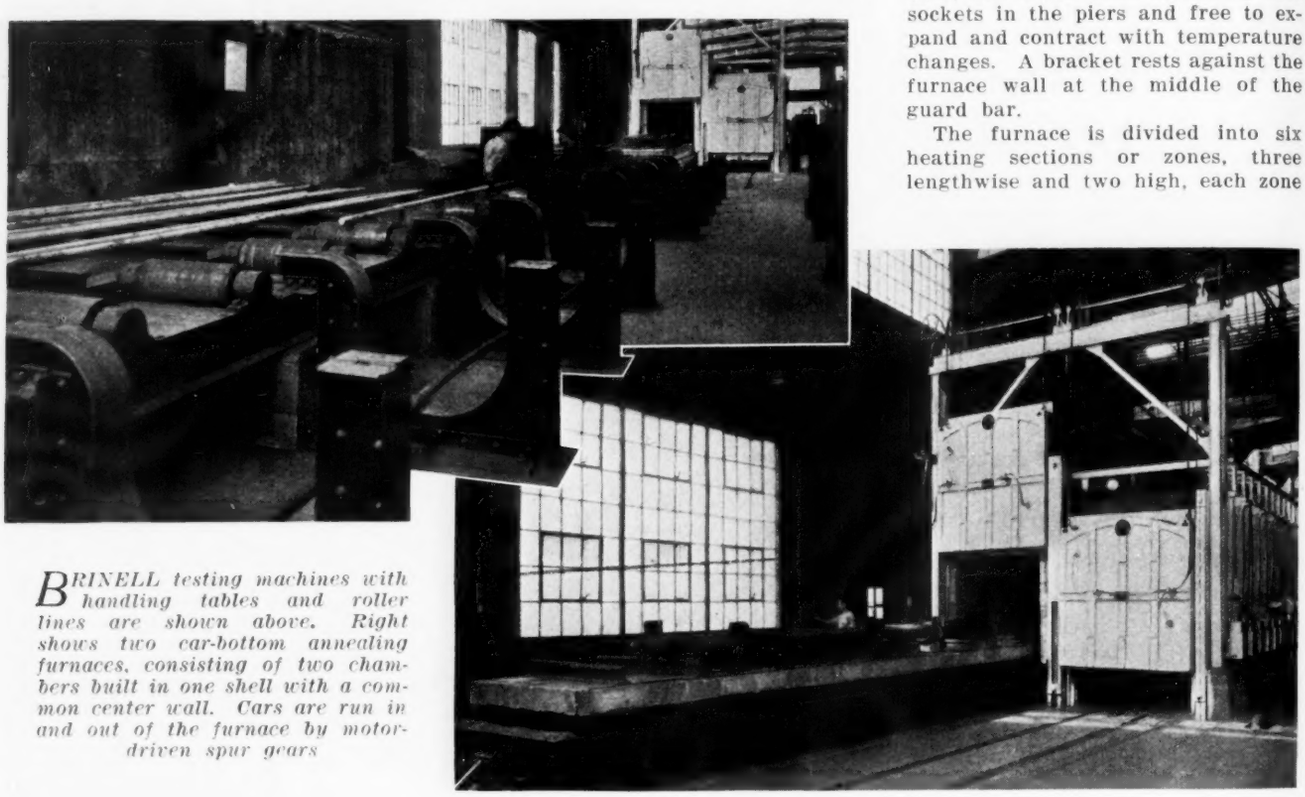
ILLUSTRATION above shows the preheating chamber of the roller-hearth furnace with one charge on the rolls in the chamber and another in place on the charging mechanism. At the left is a group of round bar straighteners. Note the steel cradles into which the bars are rolled pending removal by crane

10 inches thick, the inner course being of semirefractory brick and the outer course of heat insulating brick. The roof is arched and heating units are supported in the roof and below the rolls.

The high-temperature chamber is constructed with brick walls 13½ inches thick, the lining being 4½ inches of fire brick and the remainder of insulating brick. The roof is arched and heating units are supported in the roof, on the sidewalls and under the rolls. Both chambers are provided with a steel plate casing and a framework of I-beams. All doors have machined contact surfaces on both the door and frame, and are inclined to the vertical so that they rest against the frames in all positions. Sand seals are provided at the top and bottom.

Heating units are divided into five sections or zones lengthwise of the two chambers, two for the preheating chamber and three for the high-temperature chamber. The temperature is controlled by five indicating temperature controllers, one on each section, and a six-point recording pyrometer is provided to record the temperatures. Separate panel boards are provided for mounting the control equipment and the instruments for each chamber. The heating units in the preheating chamber are rated at 400 kilowatts and those in the high-temperature chamber are rated at 576 kilowatts. Power measuring instruments have been provided, so that the power consumption per ton of steel quenched or normalized can be determined daily.

Two pit annealing furnaces, each with 50 tons capacity, are next in the line of operation. The heating chamber is in the form of a rectangular pit, inside clearance dimensions being: 27 feet long, 8 feet 6 inches wide, and 7 feet deep. Six piers extend crosswise of the furnace at the bottom for supporting the charge. The furnace walls are 18 inches thick, the inner 9 inches being of semirefractory brick, and the outer 9 inches of heat insulating brick. A steel plate casing with I-beam framework is provided on all sides and bottom. The bottom is raised above the floor of the surrounding pit to prevent moisture entering the furnace walls from the foundation.



BRINELL testing machines with handling tables and roller lines are shown above. Right shows two car-bottom annealing furnaces, consisting of two chambers built in one shell with a common center wall. Cars are run in and out of the furnace by motor-driven spur gears

Cover Has Sand Seal

The cover consists of a rigid structural steel framework lined with brick, the whole being in the form of an arch extending crosswise of the furnace. A sand seal is provided by means of a channel filled with sand on top of the furnace and a blade on the under side of the cover which extends into the sand when the cover is in place.

A stiff-legged crane is provided to raise the covers and move them between the two furnaces when charging or discharging. To reduce power consumption, the furnace is charged and discharged as quickly as possible, this being facilitated by racks made of heat-resisting steel, which are provided to hold the charge. By this method two lifts charge or discharge the furnace. Supporting piers are capped with heat resisting alloy for the cradle to rest upon, and guard bars, of heat-resisting alloy, are provided along the sidewalls, opposite each U-shaped cradle member, to guide the load when lowering it into or taking it out of the furnace and to prevent damage to heating units and sidewalls.

A row of heavy fire brick tile, securely anchored to the steel casing, extends completely around the top of the pit, to prevent injury to the walls by accidental contact with the load when raising or lowering. The guard bars are supported from these tiles, the lower ends extending into sockets in the piers and free to expand and contract with temperature changes. A bracket rests against the furnace wall at the middle of the guard bar.

The furnace is divided into six heating sections or zones, three lengthwise and two high, each zone being regulated by an indicating controller. A six-point recording pyrometer is provided to record the temperature of each zone. The heating units, with a total capacity of 1098 kilowatts, are placed on the sidewalls and on each face of each supporting pier.

The cooling rate on a large mass in these well insulated furnaces is slow, being only 6 to 10 degrees per hour between 1450 and 1000 degrees Fahr. This extremely slow rate is seldom needed, and in order to accelerate the cooling without admitting air to the furnace, cooling pipes of heat-resisting alloy are built into the cover. Air from a blower and duct system is blown through these pipes which are laid crosswise, spaced 9 inches apart for the entire length of the cover, the air entering one end of the pipe and the other end be-

ing open to the room. This arrangement allows cooling at any rate from 10 degrees to 60 degrees per hour.

To further accelerate cooling, blast gates are provided, spaced 2 feet apart along each side of the furnace, which, if opened and the cover raised, will allow air to circulate through the heating chamber by convection. These furnaces are constructed so that when the steel begins to show color an analysis of the atmosphere in the furnace will show only 0.5 per cent oxygen. This eliminates the possibility of scaling during the annealing operation.

Next in line of operation are the two car-bottom furnaces, consisting of two chambers built in one shell with a common center wall. Each chamber is 26 feet 6 inches long, 5 feet wide, and 4 feet 9 inches high, on the inside. Two cars, one for each chamber, are provided with smooth tops composed of hearth plates of heat-resisting alloy extending the full length and width of the platform. Sand seals are provided along both sides of the cars and one across the front ends to engage the blades on the bottom of the doors, there being also a sand seal on the back of the furnace which engages when the car is admitted.

Motors and Gears Move Cars

The cars are run in and out of the furnace by motor-driven spur gears, engaging with racks mounted on the under side of the car framework, and extending the full length. The cars are built of structural steel and plates with retaining angles of cast iron around the edges to hold the brickwork in place. Each car is supported on six wheels flanged and of standard gage, all provided with roller bearings.

Heating units are mounted on both sidewalls of each chamber, back wall and door, and in the car platform underneath the hearth plates. The terminals for the car units are connected to contact bars mounted on the cars, which engage with resilient contact shoes mounted on the furnace walls below the heating chamber, when the car is in position. Channel-shaped scale pans are provided at all joints in the hearth plates which prevent scale or dust from reaching the heating units beneath.

The doors are inclined to the vertical, and machined surfaces on the sides of the doors slide on corresponding machined surfaces on the frames, so that they are tight against the frames at all times. Sand seals are provided at the top and bottom of the doors. Flexible connections are provided to the units mounted on the doors, so that it is not necessary to disconnect them for raising the doors.

The furnaces are built in a casing of steel plate with a framework of I-beams. Sidewalls are 10 inches thick, the inner lining being of semi-refractory brick and the remainder of heat-insulating brick. The division wall is 18 inches thick, there being 9 inches of insulating brick in the center. The arch is 9 inches thick. These furnaces also are provided with auxiliary cooling pipes as were the pit furnaces. U-shaped heat-resisting alloy cradles also have been provided for handling the bars in these two furnaces.

The heating units are divided into three zones in each chamber, each zone controlled similarly to previously described furnaces. The total capacity of the heating units in each chamber is 675 kilowatts.

The heating units used in all these furnaces consist of heavy strips of nickel-chromium resistance material formed into loops, with units spaced approximately 1½ inches apart. The terminals extending through the walls are of double thickness and are incased in heavy bushings of refractory insulating material. The sidewall units are supported and spaced by molded hangers and spacers of refractory insulating material.

Controls are mounted in a small two story building, built on the south side of the main building adjacent to the furnaces, the electrical equipment being on the first floor and the pyrometer equipment on the second floor, with telephone connection to each furnace. The furnaces are spaced so that the full furnace equipment can be duplicated whenever needed.

Adopt Coal Testing Standard

Standard methods of laboratory sampling and analysis of coal and coke submitted by the American Society for Testing Materials, which is the proprietary sponsor for the project, have been approved by the American Standards association. These methods were originally prepared by joint committees of the American Society for Testing Materials, American Foundrymen's association and American Chemical society. The recent revisions of the methods consist of minor changes in some of the methods of test and do not radically alter any of the procedures. These changes are the result of investigations of the methods of analysis with a view to increasing their accuracy.

Unico Motor Products Corp., St. Louis, has changed its name to Motor Products Mfg. Corp.

Producers Agree on Standard Symbols for Nirosta Alloy Analyses

ALL licensed producers of Nirosta metal in this country have agreed on a standardization of symbols, designed to eliminate the confusion previously experienced by buyers in specifying desired analyses. Fifty companies participated in this agreement, many making important concessions that the desired program of simplification might become effective.

Heretofore a half dozen or so symbols have existed for each analysis produced, with no serious attempt until now to obtain a base symbol and vary it in accordance with the analysis changes. For instance, KA2 has been used as a symbol for several analyses for lack of something more definite.

In addition to standardizing the symbols, it has been agreed to indicate on shipments the source of the Nirosta metal, each producer to combine with the word Nirosta, the individual brand name or the company name of the producer.

The newly standardized symbols for Nirosta, designating type of steel within classifying ranges, follow:

BASE SYMBOLS

KA2 for austenitic chrome-nickel alloys in the corrosion-resisting field.
KNC for austenitic chrome-nickel alloys in the heat-resisting field.

FOR WROUGHT MATERIAL

	Per cent						
	Carbon	Manganese	Sulphur and phosphorus	Silicon	Chromium	Nickel	Molybdenum
KA2	0.16 max.	0.6 max.	0.03 max.	0.75 max.	16.5-20.0	7.0-10.5	.....
KA2-S	0.07 max.	0.6 max.	0.03 max.	0.75 max.	16.5-20.0	7.0-10.5	.....
KA2-H	over 0.16	0.6 max.	0.03 max.	0.75 max.	16.5-20.0	7.0-10.5	.....
KA2-Mo	0.16 max.	0.6 max.	0.03 max.	0.75 max.	18.0-22.0	7.0-10.5	2.0-4.0
KA2-SMo	0.07 max.	0.6 max.	0.03 max.	0.75 max.	18.0-22.0	7.0-10.5	2.0-4.0
KA2-HMo	over 0.16	0.6 max.	0.03 max.	0.75 max.	18.0-22.0	7.0-10.5	2.0-4.0

The same symbols are used for cast material where silicon maximum limit is higher.

FOR WROUGHT AND CAST MATERIAL

KNC-3	0.20 max.	0.7 max.	0.03 max.	2.0 max.	23.0-27.0	17.0-21.0	.....

Trend in Steel Ladle Design Toward Two-Stopper Units

FOLLOWING the usual custom, the three sessions of the twelfth semiannual meeting of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers at the Cleveland hotel, Cleveland, November 20-21, were devoted to the discussion of miscellaneous questions relating to open-hearth practice and submitted by L. F. Reinartz, president of the committee and works manager, Middletown division, American Rolling Mill Co., Middletown, O. All previous records of attendance were surpassed, registration of open-hearth superintendents, metallurgists and engineers closely associated with the steelmaking industry totaling 137.

The report of the refractories committee brought out the fact that no brick yet has been developed that will stand a temperature of 3500 degrees Fahr. Clay refractories have undergone no new development other than the employment of better workmanship and a better method of selecting raw material. High alumina refractories have been tried in the first 4 feet of open-hearth checkers and are proving economical in that no cleaning is necessary, no fusion is encountered and the life of the checker is extended. The use of metal encased magnesite brick as well as high temperature cement for laying up regenerators and arches, is increasing.

Friday afternoon about fifty members visited the open-hearth department of the Corrigan-McKinney Steel Co., Cleveland, which includes 14 basic furnaces of the stationary type.

Superheating Affords Saving

In discusing the economies to be gained in the use of superheated steam for the atomization of tar and oil one operator cited a saving of 2 gallons of oil per ton of steel by substituting superheated steam for wet steam. The superheater in his particular plant is placed in the flue just before the damper and no by-pass is employed. The temperature of the steam approximates 650 degrees Fahr. Another operator reporting the use of superheated steam in connection with oil-fired furnaces mentioned a saving of ½-gallon of oil per ton of steel with a superheat of 650 degrees. Equipment is arranged so that the steam comes from a control stand through a superheater to the furnace. While there are advantages in using superheated steam, the speaker pointed out, some are greatly exaggerated. Actual saving to be gained by the use of dry steam amounts to $1230 annually, according to another speaker, based on the 130-ton furnace operating 7200 hours a year, with oil costing 4 cents a gallon and with 65,000,000 b.t.u. delivered to the furnace an hour.

In discussing means used with bifurcated spouts to control the flow of metal into two ladles, a speaker cited the use of a short section of rod similar to a stopper rod to divert the stream of the metal in the desired direction.

Heat Is Conserved

Comparison of tilting and stationary open-hearth furnaces brought out the fact that one large independent steelmaker in this country is discontinuing the tilting type, another large steelmaker is inaugurating the use of large stationary furnaces while European makers are using tilting units to a large extent. It was brought out in discussing the tilting furnace that the initial cost of installation was higher than stationary furnaces, considerable heat is saved in operating the furnace from tap to charge and, that the slag line can be made up quicker

A steelmaker operating tilting furnaces stated that his practice necessitated the running off of a third slag and, hence, the tilting type open hearth lends itself to this procedure. He explained that the growing use of the tilting furnace in European plants is due more or less to the raw materials with which those operators have to contend. Maintenance costs are slightly higher with the tilting furnace on account of refractories. On 100-ton tilting furnaces the roof has a life of about 300 heats. It is 15 inches thick.

That operating cost is varied with the per cent of operations was brought out by one speaker who mentioned that with a 43.98 per cent reduction in operating schedules, costs increases 7.27 per cent. When the size of the heats is increased 10 per cent the cost above material increases 11.89 per cent based on operating schedules at one plant. One speaker mentioned that by increasing production 25 per cent by enlarging furnaces a decrease from 8 to 10 per cent was realized in the cost of materials.

How radiation losses on an open hearth were decreased to 200 degrees by insulating the roof was explained in detail by one operator. A 3½-inch insulation was applied to the roof of one furnace which had 100 heats. The furnace was run for 250 heats and was shut down because of business conditions. Results show that the insulation has not affected the life of the roof to any marked extent. The first 200 heats were melted on gas and the remaining 150 heats on fuel oil. Another operator pointed out that in the future he plans to lay block wool 3 inches thick across the ribs thereby obtaining an air cushion on the inside of about 4 inches and saving from 200 to 300 heats.

The trend in hot metal cars is toward the use of larger units. In 1920 cars used for the transportation of molten pig iron averaged about 80 tons capacity whereas four years later cars of 150 tons capacity were employed. At present a car of 175 tons capacity is being discussed widely. These ladles of the mixer type have the advantage of keeping the hot metal uniform. The capacity of open-hearth ladles has increased from 120 to 175-ton capacity based on a 9-inch lining. The trend in this direction is to make a squatty unit and to employ two stoppers. It was pointed out that the 175-ton ladle has the same static head as ladles of 100 tons capacity. Trunnions on 175-ton ladles are 18 inches diameter and have a 10-inch face. An interesting sidelight mentioned by the speaker was that in 1929 two-thirds of the hot metal used for making basic steel in this country went from the blast furnace direct to the open hearth without going through the steelworks mixer. A feature of the mixer-type ladle is that more sensible heat in the metal is retained than that coming from the steelworks mixer.

At one plant where the mixer car ladle is employed for transporting hot metal 10 miles to the open-hearth plant approximately 40,000 to 45,000 tons is handled before relining of the ladle is necessary. At another plant approximately 300,000 tons of metal is handled per lining. By the use of the mixer-type car the scrap loss of 2 per cent when using open-top ladles has been decreased to 0.2 per cent.

Desires High Output

A steelworks engineer in describing one of the new plants now being laid down in Russia pointed out that the Russians insist on the duplication of high production rates acomplished by American plants. One plant now being built in Siberia includes 472 by-product coke ovens, eight 1000-ton blast furnaces, a bessemer department, fourteen 150-ton open-hearth furnaces, two 44-inch blooming mills and nine merchant mills. The open-hearth furnaces will be 48 feet long and 16 feet wide and will have a bath depth of 36 inches. The fourteen furnaces will be spaced on 105-foot centers.

Machine control of open-hearth combustion continues to receive attention.

In this country at present there are from 40 to 50 open hearths under control in ten different plants. Based on 2500 heats which were melted with tar, coke-oven gas, oil and mixed fuel mechanical control has afforded increased production and reduction in costs amounting from 10 to 25 cents per ton. While quantity control of the fuel and air seems to predominate, the trend is toward complete mechanical regulation.

Consensus of opinion varied regarding the advantage of a flame high in luminosity. Claim was made by some operators that heats melt down faster when a flame of this type is used. Another operator cited operating data covering one year's operation of an open hearth using a nonluminous flame. Gross tons of metal produced amounted to 93,787 tons, heats averaged 102.2 tons and the average yield 92.8 gross tons. The annual gas consumption was 4,500,000 B.t.u. which is equivalent to 370 pounds of coal. Brick consumption per gross ton was 7 pounds. The furnace was in operation 7716 hours and 40 minutes. The average time per heat was 11 hours and 20 minutes and the furnace made 12 tons an hour. The speaker emphasized that stratification of the gases should be watched carefully inasmuch as bad draft and breaking out at the doors is due to this cause.

Reduces Gas Velocity

The Rose-type port, as described by one speaker, is designed to overcome the difficulties encountered in the use of the old-time stationary port. By slowing down the gases, which this port accomplishes, erosion of the downtakes is reduced, in addition to erosion of the front and backwalls and roof. It also affords an open furnace, a constant jet velocity of the burning gas and an increased life of the backwalls.

Erosion of back of furnace is due to a mechanical action rather than to a chemical action and is caused by the turbulence of the metal at the time the slag is working. This fact was brought out by a speaker in discussing slags and their compounds. He advocated a smooth surface at the rear of the furnace.

In discussing natural gas as an open-hearth fuel, the speaker mentioned that with a luminous flame it is possible to get a satisfactory rate of heating with a flame temperature which is sufficiently low to prolong the life of refractories indefinitely. Since the luminous flame radiates its heat during combustion, it is possible to carry a uniform temperature over a large area of the bath, thus giving a uniform heat input.

The flame should be as far away from the roof and as close to the bath as possible. Its direction and length can be controlled reasonably well by the design of the uptake and port to give the correct velocity for the weight of air and gas being burned. The length of the flame can be controlled by the ratio of primary air mixing with the gas, by the amount of turbulence permitted in the flow of the streams of air and gas and by the velocity of the flowing gases. Since combustion takes place by diffusion of the air with the gas, the greater the rate of the diffusion, the shorter the flame should be.

The velocity at the port, it is believed, should be about 22 feet a second. In designing the furnace it is possible to provide for the escape of heat at the port to prevent burning of brickwork. With a luminous flame where the speed of heat transfer by radiation is high, the gases should be cool enough by the time they leave the furnace to do no damage to the refractories. Reducing their temperature decreases their volume and the velocity at which they leave the furnace.

With multiple pass checkers and their increased resistance it is important to use a fan for both forced and induced draft. Since the checkers continually are changing their rate of flow of air and gas by natural draft, there can be only one time during this cycle when the proportion of gas to air is ideal. Because the specific heat of air per pound is about twice the specific heat of steel, 1 pound of air taken through the furnace in excess of actual requirements robs the furnace of as much heat as 2 pounds of steel. With forced and induced draft it is possible to regulate the amount of air and furnace pressure for an ideal condition and maintain that condition throughout the entire cycle.

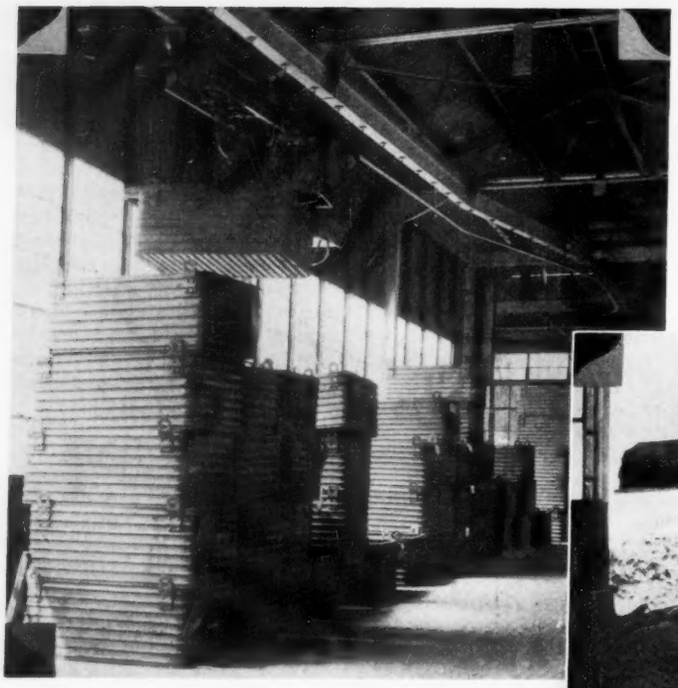
Attributes Cracked Corners on Ingots to Preparation of Molds

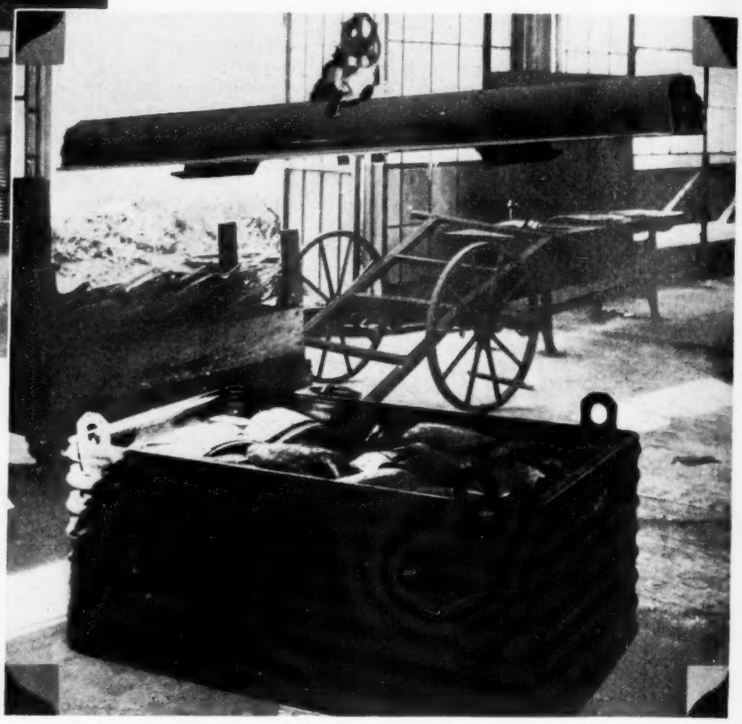
HIGH temperature cement is used at the joints of stopper rod brick largely in open-hearth practice. In discussing tar as a mold coating one speaker attributed cracked corners of ingots to this element. Aluminum paint is being used by one steelmaker on rimming and killed heats. A thin coat of this paint is sprayed on the mold interior giving a deoxidizing effect on the metal as it rises and makes for a more quiet pour. Further discussion brought out the point that in order to get a uniform coating of tar the mold should be dipped. The speaker advocating this method mentioned that cracked corners on ingots are due to mold design, the quality of steel or both. At one plant the practice is to dip the mold in a tank of tar approximately 1¼ hours after stripping.

The size of heat, mold and nozzle are important factors in the making of quality steel. The steel should be poured fast and a large nozzle used in order to keep the metal from rolling back into the mold. The nozzle should deliver approximately 1000 pounds of metal in 8 seconds. A 0.10 per cent carbon steel will roll best when at a temperature in the ingot form of 2150 to 2200 degrees Fahr.

Open-hearth practice as followed in a Canadian plant includes charging high-carbon steel scrap followed by all limestone requirements and then turning on the oil so that the flame will glaze over the charge. A second charge includes mild steel scrap. After this is melted pig iron is added and the entire charge melted down. The total melting time averages 4½ hours. The flame is kept well over the stock and is reversed every 10 or 15 minutes. Manganese steel scrap is added in the second charge and no ferromanganese is charged in the heat if possible. Foaming occurs if dirty scrap or too much manganese is used. Fifty per cent of the ferromanganese is added to the furnace and the heat is held for 3 minutes. Electric ferrosilicon in walnut size is added in the ladle when filled to a depth of 20 inches. The tap hoe is held to a minimum diameter of 7 inches.

Selection of raw materials is important in the making of killed steel ingots. Clean scrap, mill cropings, heavy railroad scrap, etc., is desirable. The use of ore is timed to permit 2 or 3 hours refinement. Slag is kept fluid at all time with a minimum amount of fluorspar. An overcharged bath likely will give metallic inclusions. Continuous stirring of the bath with rods will reduce the oxides and silicates in the metal. To insure the diffusion of alloy additions the temperature of the slag should be watched carefully. Moreover the pouring temperature of the metal from the furnace to the ladles should be held within a narrow range. Alloy contamination of open-hearth steel in various parts of the country differs. Research indicates that 0.20 per cent ferric oxide in rimming steel materially assists in holding chipping costs to a minimum. One speaker pointed out that quality steel can be made and chipping costs reduced by adding spiegel in the furnace and 15 per cent silica seven minutes later. After the analysis for carbon, which requires from 30 to 35 minutes, is obtained from the laboratory the manganese is added in the bath. Ten minutes later the heat is tapped.





STEEL tote boxes may be stacked to a height of 10 feet, as the illustration to the left indicates, only one man, in the cab of the monorail hoist, being required for the complete handling and stacking operation. Below is shown the specially designed grab mechanism for handling the boxes. Note the two motor-operated jaws which engage and disengage steel angles welded to the insides of the boxes at the ends

Lifting Device for Monorail Hoist Proves Efficient

BY R. S. DART

AN EASTERN shovel making plant has effectively facilitated its handling of material through the installation of an overhead monorail hoist system, a feature of which is an unusual type of grab mechanism for lifting steel tote boxes. The operation of this system is described in the accompanying article by R. S. Dart, former direct representative in Boston of the Cleveland Electric Tramrail division, Cleveland Crane & Engineering Co., Wickliffe, O., and now associated with the Cleveland Tramrail New Haven Co., New Haven, Conn.

USERS of electric hoists, cranes and monorail systems are well aware of the importance of the connection between the hoist hook and the object to be lifted, a matter which is left largely to the ingenuity and resourcefulness of the user. This space between the crane hook and the load, trivial though it may appear, might be termed the "no man's land" of overhead materials handling and until recently has received little study or treatment.

A number of factors enter into the problem. The means of attaching the hoist hook to the load should be absolutely safe and foolproof from the standpoint of the man making this connection, if such a man be required. Furthermore the union between the hook and load, once established, should be absolute until the load is released at its destination and passing the load over the heads of workers should be possible with complete safety. Once at the destination, the disconnection of the hoist hook through the load should be accomplished speedily with a minimum of manual effort. Lastly, the device or arrangement employed should require the minimum of headroom between the hoist and load.

A notable case where these conditions were met successfully is disclosed in the tote box handling system recently installed at the plant of a New England shovel maker. Before describing the equipment adopted, a better understanding can be had by first outlining the handling problem that originally presented itself: The material to be handled consisted of shovel blades in process. It was necessary to take these from the stamping presses, in the form of rough blanks, and convey them to temporary storage. The final movement was from storage to the "handle line," where the blades were attached to the shovel handles.

The problem embraced several complications. A shovel blade, especially in the rough, is an awkward part to handle. It is irregular, will not stack or pile in any convenient or regular way, and is covered with burrs and sharp edges. At certain stages it is practically red hot. Furthermore, the blades pass through production not as a continuous flow of identical units, but must be grouped into many different sizes and forms. Due to the different

kinds of material, heat treatment, and style of shovel blades, the number of distinct units which had to be handled amounted to over 500.

The solution to this handling problem finally was based on the use of pressed steel tote boxes as the unit of handling. The tote boxes now in use, shown in an accompanying illustration, are made of 12-gage pressed steel, 5 feet long, 3 feet wide, and 2 feet high. Each box is equipped with two steel angles welded to the ends and on the inside near the top. These angles are used by the grab when it attaches itself to the box, as will be described. Each tote box has an approximate carrying capacity of 1000 pounds.

Monorail System Effective

To meet the requirements of the flow of this material into production, careful investigation proved the effectiveness of a monorail system with an electrically propelled cab-controlled carrier, traveling at selective speeds up to 600 feet per minute. The unit chosen for this work has a carrying capacity of 1 ton, negotiates curves of 4-foot radius, and climbs grades between buildings. Advantages which favored the choice of the monorail system were that the entire handling of product between departments to and from storage could be accomplished by one man; considerable aisle area was eliminated since the boxes could be stacked to a height of 10 feet or more; and the rapid movement of production across obstructions and between buildings was possible.

To realize the maximum time and labor saving with the use of this carrier and monorail system, it was found to be desirable to have the operator in the cab of the carrier accomplish the complete operation of picking up the load, transporting, and setting down in the exact spot required. In other words, the monorail carrier operator should be able to handle all of these tote boxes, wherever required, without the assistance or guidance of any man on the ground. This part of the problem was put up to the manufacturer supplying handling equipment.

The solution, which several months of operation have shown to be a successful one, was based on the use of a specially-designed tote box handling grab. This grab, also shown in an accompanying illustration, hangs from the load hook of the monorail and can be connected or disconnected quickly. It is controlled entirely by the operator in the cab of the hoist. It is lowered onto the tote box and a small motor drives a leadscrew which forces jaws out toward the ends of the box. These jaws run under the angles which are welded to the ends of the box, attaching themselves positively to the load. The box is then raised, transported and finally set down at its destination, which may be at some machine or on the storage pile. The grab is then disengaged from the box by the operator in the cab, by simply reversing the direction of the motor, and withdrawing the jaws from under the angles. It is to be emphasized that at no time is any assistance or guidance required of any operator on the floor or elsewhere. The entire operation of the grab is controlled by the man in the cab of the hoist. Moreover, the work is speedily and effectively carried on, boxes are passed safely over various obstructions and over the heads of workmen.

The operation of the grab is quite simple. As it is brought to rest on top of the tote box, two expanding members enter the box about 2 inches. These members are actuated by a right and left-hand leadscrew which is rotated by a small electric motor controlled from the cab of the hoist. As the operator manipulates the grab controller, these two expanding members move to the respective ends of the box and engage the lifting angles welded on the inner edges. The box is now ready to be lifted and carried and is positively locked to the grab. Upon arrival at its destination, the reverse operation takes place, the sliding members moving a short distance toward the center of the box, thus freeing themselves from the lifting angles. The grab is then free to be lifted and conveyed elsewhere.

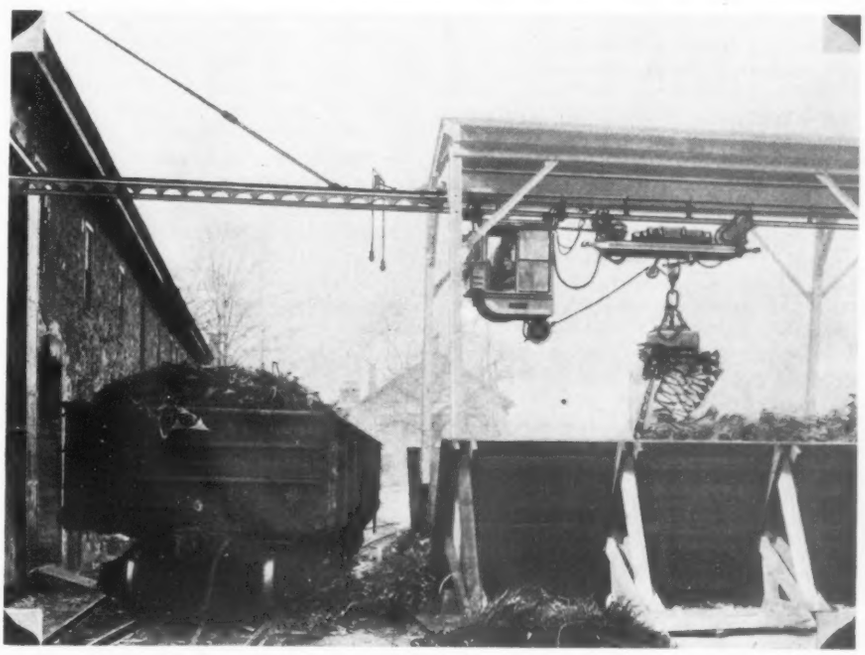
Safety Is Insured

It should be noted that although piles of tote boxes may have a tendency to lean, the grab will always enter the top of the boxes, regardless of such conditions, and pick up the box safely. Furthermore, it is impossible for the grab to attach itself to more than one box at a time, which will sometime occur with other devices, causing delay or accidents. A slip friction clutch is built into the mechanism of the grab and allows the expanding members to come to a dead stop against the ends of the box before the current is shut off, without damaging themselves or burning out the grab motor.

Permits Efficient Storing

The use of this grab allows the storing of boxes close together and to an unusual height. It is possible with this system to store the boxes five high or to a height of 10 feet from the floor to the top of the storage pile. While it is entirely practical from the standpoint of handling systems to store the boxes close together without intervening aisles, other considerations have caused the users to leave an aisle between each two rows of boxes.

It was found a comparably simple matter to increase the flexibility of this cab-operated system by utilizing the carrier to handle the scrap resulting from the various press operations, by means of a magnet. The unit doing this type of work is shown also in one of the illustrations. Connecting the monorail system in the building to the monorail system over the bin was accomplished by using a swing-type jib crane, which enabled the carrier to operate across the railroad tracks at a lower level than railroad clearance, requiring the jib crane to be swung out of the way during the passage of a box car or locomotive.



A swing-type jib crane permits passage of the carrier from the building to the scrap storage bin. The track is swung back out of the way to allow passage of a box car or locomotive

National Founders Group Approves Plan for Industrial Education

(*Concluded from Page* 26)

about 80 men. In addition, Professor McCaffery said, there is an annual foundry conference at Madison. This year 130 attended, of which approximately half were from outside the state. He believed great good could be accomplished by such co-operation between technical schools and industrial concerns generally throughout the country.

If the industry is to advance it must do its own research, Prof. McCaffery declared. Co-operative effort is desirable among several plants, where the individual plant is not large enough to support this work, and few plants are, he added. At present, he said, there are probably not more than eight or ten research laboratories in the true sense in American industry. In response to questioning, Professor McCaffery said that some of the research problems conducted by foundrymen under the universities' supervision were: Two pertaining to the heat balance of malleable furnaces, one being conducted at a plant where coal was used and the other at a plant where oil was used; the annealing cycle in malleable operations and reactions taking place in basic-lined steel furnaces.

Shrinkage Is Topic

"Money Savers for the Jobbing Industry" was the subject of an illustrated talk by William C. Wright, consulting foundryman for the association. He discussed at length the subject of undue shrinkage, asserting that this factor causes the most trouble in foundries. He emphasized the importance of uniform sections, especially where two sections come together. Making a low-phosphorus iron from a low-phosphorus pig, a malleable pig and steel comes as near to overcoming the trouble of undue shrinkage as anything, he said. Low phosphorus was understood to mean around 0.16 or 0.18 per cent.

Keeping the silicon as low as machining will permit also is recommended. Gating, Mr. Wright said, has a great influence, also the pouring temperature. Discussing sand mixtures, he asserted that synthetic sand has qualities which make it superior to natural molding sand. He was impressed by the fact that the fineness of the grain of synthetic sand can be kept constant.

Robert E. Moore, vice president, Flockhart Foundry Co., Newark, N. J., described an application of gray iron to curbing. He described a patented process, wherein the metal is used in conjunction with concrete, offering unusual resistance to impact. While no efforts have as yet been made to advertise the use of this process, it already has been accepted as standard by two or three leading railroads and industrial concerns.

Discussing difficulties confronting the American farmer, Thomas D. Campbell, Hardin, Mont., urged association members to support the activities of Federal Farm board. He favored a flexible form of tariff which would afford farmers a measure of relief comparable to that enjoyed by industry. He also urged an adjustment in transportation rates, which he believed could be done without affecting the revenues of transportation companies. He expressed himself, as a farmer, as being heartily in favor of inland waterway development.

Relative to rates, Mr. Campbell asserted that at present almost half of the gross selling price of grain from Montana goes to pay for the transportation costs. No other industry in the United States, he said, could stand such a proportionate charge, except possibly those shipping heavy commodities, such as iron ore and coal, which are mined by machinery at low cost.

The speaker did not favor a reduction of railroad rates, but thought that a more equitable adjustment could be made. In this connection he pointed out that a movement of a car of cattle 2000 miles to market is more hazardous and expensive than that of a car of wheat and that the value at present prices is five times as much. Still, he said, it costs twice as much to get a car of wheat to market as it does a car of live stock.

Mr. Campbell believed that transportation facilities are overtaxed and that adequate relief without discrimination against any particular railroad could be provided by the proper development of inland water ways.

Alluding to the farmers' need of greater tariff protection, he cited as one case the importation of heavy quantities of molasses. This comes in practically duty free, he said, and takes from the corn farmer a market he used to have for his low grade corn, estimated as equivalent to 100,000,000 bushels. As a result, the speaker declared, this poor corn drifts to terminal markets and because it can be delivered on future contracts at a reasonable discount, it keeps the price down on 3,000,000,000 bushels of corn. This condition, he declared, could be changed under existing laws and regulations.

Need for Adjustment Plain

The following speaker, Walter Case, president, Case Pomeroy & Co. Inc., investment banker, New York City, was at variance with some of the opinions expressed by Mr. Campbell. He believed that the further development of waterways in this country was going to be the figurative straw that would break the railroad camel's back. The railroads, he said, had already been seriously hurt by the automobile, both passenger and truck, and that the present pipe line development was also going to affect railroad business materially.

He declared that notwithstanding these inroads approximately 80 per cent of the country's traffic will probably always have to be carried by the railroads. By doing anything that will permanently injure the railroads, the country is doing itself untold harm. He believed that at the rate railroads are now being confronted with adverse conditions the time will not be far off when private capital will have to relinquish control and the carriers be turned over to the government for operation.

Mr. Case believed that the artificial measures now being taken by the Federal Farm board will not accomplish as much as the natural laws of supply and demand. Discussing the business outlook, he said that he believed that after the turn of the year retail prices would decline in the same relative degree that wholesale prices have declined and that when this did happen the general trend of business would move upward.

Helpful, he thought, in any early adjustment would be a distribution of world's capital. He thought that as soon as bankers of this country got courage up to lend money to other countries an important step toward readjustment will have been made.

T. Yoeman Williams, managing director, League for Industrial Rights, New York, described as unsound the economic practices of trade organizations in the electrical construction field.

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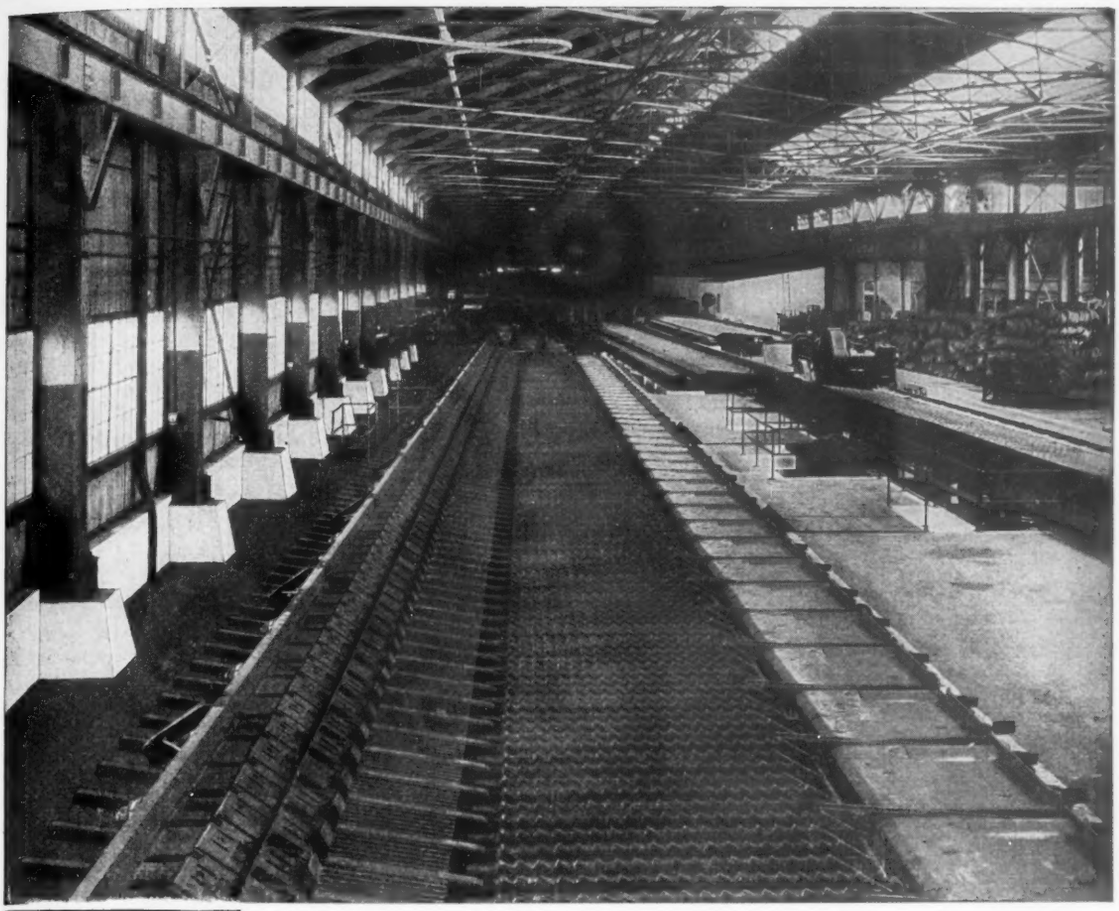

The Mesta Mechanical Cooling Bed (Fisk Patent) a recent development of significance to the modern steel plant

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Annual requirements of steel for miniature golf courses are estimated at 4000 tons, not including new construction

Large Uses of Steel in Small Ways

179th Article ◆ Miniature Golf

SOME months ago a government survey placed the number of miniature golf courses in the United States at 25,000 and a more recent estimate places the total at 50,000. The number within a radius of 30 miles of New York exceeds 1000. Los Angeles reports more than 300 within the city limits. Regulation courses have been constructed on some of the luxurious ocean liners. Mary Pickford is said to have a private course which cost $55,000.

Stainless Steel Used

Much steel is used in the construction of the miniature courses and in the manufacture of clubs with which they are equipped. Tom Thumb Inc., states each of its courses has 72 to 96 putters. Miniature Golf Courses of America Inc., equips each course with 90 putters. One course in New York has 620 putters. The putters frequently are made of stainless steel tubing with forged steel heads. Because of the severe service requirements the cheaper grade of putters are being discarded. Nearly all of the putter heads are chromium plated and at least one manufacturer is using a chrome-nickel steel shaft.

Other steel used in the construction of the courses includes the galvanized iron pipe surrounding fairways to prevent balls rolling out of bounds; galvanized sheet steel used for holes; galvanized pipe used for underground leads from fairways to putting greens; steel pipe for electric light supports; and structural steel used in the office or entrance house.

The problem of enclosing outdoor courses for winter use is receiving serious consideration. Many courses have awnings which usually are supported by galvanized steel pipe ¾-inch to 1½-inches in diameter. Other uses of steel include fences, heating apparatus, framework for flood lights and for advertising signs.

The annual demand for steel for miniature golf courses is unknown. Some authorities feel the construction of courses has already exceeded the number which can be operated profitably, but others believe that the movement is just started. The amount of steel actually in use may be estimated on a basis of 40,000 courses in existence today. Assuming 75 putters for each course this one item represents about 750 tons of steel forgings for the head and 250 tons for the steel shaft.

Where galvanized pipe is used for guards, the average course uses 1000 feet of ¾ to 1¼-inch pipe. On the basis of one out of three courses using this pipe the total amount comes to approximately 3250 tons. Galvanized pipe for light supports, approximately 2 inches in diameter, is estimated to be used on half of the courses, which gives an additional 10,000 tons. Other steel uses, including structural steel, wire fencing and miscellaneous items totaling about ½ ton per course, are said to be found on one out of four courses. This would mean another 5000 tons. These various items total approximately 20,000 tons for the steel now in use. Assuming a depreciation of 20 per cent the annual requirements for this new field of recreation is 4000 tons, not including new construction.

This 4000 tons may be separated into the following approximate tonnages: Cold drawn seamless steel and alloy steel tubing, 50 tons; steel forgings, 150 tons; steel wire and fencing, 300 tons; structural steel, 600 tons; galvanized pipe, 2650 tons and the remainder in miscellaneous items.

Metal Is Applied to Delicate Surfaces by Spraying

Recent developments in metallization makes possible such achievements as the spraying of molten metal on surfaces of paper, cloth and celluloid, forming a coating so adhesive that it seems almost an integral part of the base. Usually the metal to be deposited is in the form of wire, although metal dust or powder may be used if another apparatus is employed.

The unusual apparatus, as decribed in *Scientific American*, consists of a pistol, weighing about 3 pounds, connected to cylinders of oxygen and acetylene, and to a source of compressed air. The compressed air actuates a small turbine which feeds the wire supplied from a reel through the nozzle of the pistol, where it meets the oxyacetylene flame and is melted. The compressed air atomizes the molten metal and forces it at about 3000 feet a second against the object being coated.

The rate at which the wire is fed through the nozzle varies according to the nature of the wire, control being provided by a needle valve which adjusts the air flow to the turbine. As the flame is of a reducing character, the atomized metal is protected from oxidation, hence metallization can be continued until the desired thickness of coating, from 0.001-inch upward, is attained. The metal finish can be buffed if a polish is desired.

The only precaution required is to insure that the surface to be metallized possesses an open texture, and that it is free from moisture, scale, or oil. Metal articles should be sand blasted, using dry sand. Paper, cloth and wood can be metallized without difficulty but paper must not be glazed, and wood should be sandpapered or given a light passage in the sand blast.

Ventwell Valve Co., Chicago, has increased capital from $1200 to $12,500.

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So writes a prominent mid-west user of steel in a letter addressed to a sales engineer in the General Electric Company's St. Louis office.

Bethlehem's truly remarkable heat-treating installation is attracting nation-wide attention and is reëmphasizing the significance of General Electric's message to metallurgists, which is, concisely:

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Hollow Steel Propeller New Development for Airplanes

BY W. G. GUDE
Associate Editor, STEEL

STEEL may become the material for airplane propellers of the future, it is indicated by recent developments in the industry. Pittsburgh Screw & Bolt Corp., Pittsburgh, now is in commercial production under the Dicks patents of a hollow steel blade, while the Hamilton Standard Co., also of Pittsburgh, and a large producer of solid aluminum propellers, is developing a steel type, both of which are termed by aeronautical officials to possess superiority over the solid blades now in common use.

Two Types Developed

Construction of these two blades involves different practice, Hamilton Standard employing a tube while the Pittsburgh Screw & Bolt Corp. welds together two steel plates. The latter uses a chrome-vanadium steel, S. A. E. 6130, two faces being cut from this material of the correct thickness and shaped to the proper contour and angles in special dies. Welding of the two plates is a special feature of the blade's construction, the process involving a joint that prevents the seams from becoming either the leading or trailing edge of the blade. This is accomplished by cupping one plate sufficiently to permit the other to set within it, thereby eliminating tension in the weld. The blade root is formed from the inner ends of one of the steel sections.

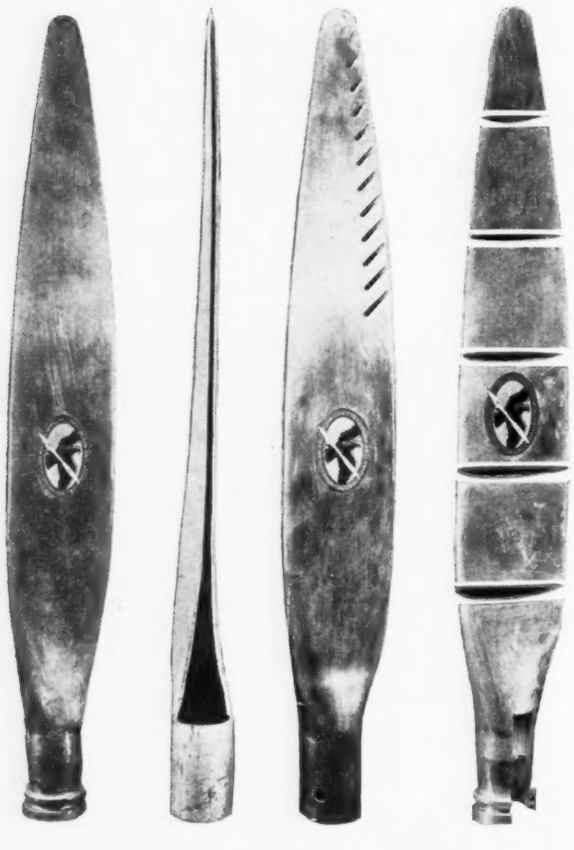
Weight of steel has been one of its disadvantages in the past in use for airplane propellers but a new type of hub design eliminates considerable weight without the loss of strength, compared with the standard type of hub now in use. Moreover, steel can be placed where the greatest stresses occur in the blade and, according to the bureau of aeronautics, United States navy, the weight of the hollow steel blades compares favorably with that of standard aluminum alloy blades even when the former are used with the standard type of hub. Because of the stiffness of the steel blade near the tip there is less distortion when in flight than in the solid metal blade.

The ultimate tensile strength and fatigue limit of the chrome-vanadium propeller steel are 100,000 and 50,000 pounds per square inch, respectively, compared with 55,000 and 12,500 pounds per square inch for the age-hardened aluminum alloy blades.

Blade Acts as Muffler

An interesting development in connection with the hollow steel propeller of the Pittsburgh Screw & Bolt Corp. is the provision for escape of motor exhaust gases. This is accomplished by leading the gases into a collector ring and then to the hollow propeller blade from which they leave through small slots cut into the trailing edge of the blade, as shown in the accompanying illustration. Some work remains to be done in providing a satisfactory design for the collector rings, but tests made by the bureau of aeronautics disclosed a marked increase in engine efficiency through the use of this exhaust system. The device also was pronounced the most effective muffler tested to date. In addition, the use of steel propellers is expected by government officials to eliminate most of the pitting and erosion now encountered in seaplane service in using aluminum alloy propeller blades.

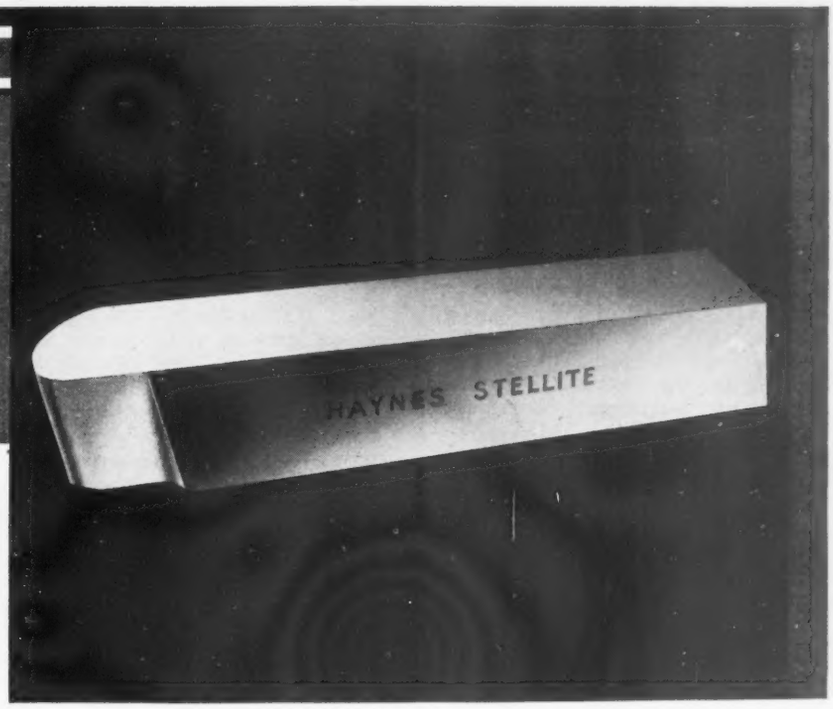
Manufacture of the steel propeller being developed by the Hamilton Standard Co. consists of swaging a cold-drawn tube of the proper dimensions to the required variation in diameter with length. After upsetting a flange at the hub end the tube is annealed and then expanded to the correct contour. Following machining the tip end then is closed and the blade heated and shaped to its final contour.



FOUR views of the hollow steel airplane propeller. Left to right they are: The finished blade; section cut away to show the hollow construction and wall thickness; a special design with slots in the blade to provide escape for exhaust gases led into the propeller through a collector ring; and a sectioned blade illustrating the wall thickness and contour at various points in the length

Magnetic Unit Definitions Published by Commission

The International Electrotechnical commission has published a complete report on definitions and names of additional magnetic units adopted by international agreement at the plenary meeting of the commission at Oslo, Norway, in July. The adoption of these definitions and units constitutes a further important advance in the standardization of electromagnetic units. H. S. Osborne, 33 West Thirty-ninth street, New York, is secretary of the United States national committee of the commission. Seven national committees were represented at the plenary meeting including France, Germany, Great Britain, Holland, Italy, Soviet republic and the United States.



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S-11-27-30

Cleveland Show To Portray Principles of Management

Present operations and future applications of the principles of management, maintenance and production, including equipment and services in connection with materials handling will be portrayed at the second Industrial Exposition at Public Auditorium, Cleveland, April 13-18, 1931. The exposition will utilize the entire arena and exhibition hall of the auditorium with exhibits covering management and maintenance equipment as well as supplies and services of engineers and engineering companies interested in better production, time and labor saving equipment, cost records, production control, better working and labor conditions and management in every phase of industrial application.

Meetings and papers are being planned on topics vital to these activities. The exposition will cover materials handling equipment in its broadest sense including overhead, floor and underground conveyors, also trucks, tractors, cranes, hoists and the varied equipment used in the industrial handling of materials and supplies.

During the same week will be held the fourth National Materials Handling meeting of the American Society of Mechanical Engineers, as well as the second Industrial Congress on Management, Maintenance and Materials Handling, which will be sponsored by the management division of the Mechanical Engineering society, the Society of Industrial Engineers, and other national groups.

Taylor Society To Meet

Administrative policies and managerial methods will be the dominant themes for all sessions of the annual meeting of the Taylor society to be held at Hotel Pennsylvania, New York, Dec. 3-5. In addition to the regular meetings, two informal group conferences are to be held on "Comparison of Time-Measuring Mechanisms—Their Characteristics and Uses," and "Are Clerical Costs Too High?" The general meetings will include in their discussion the elimination of distribution wastes, balance sheets, managing for quality, maintenance of standards, merchandising, technological unemployment and an industrial code.

Hydraulic Pressed Bearing Co., Flint, Mich., has changed its capital from $200,000 and 2000 shares no par to $200,000 preferred, 20,000 class A common and 20,0000 class B common shares.

Convention Calendar

Dec. 3-5—Taylor society. Annual meeting at Pennsylvania hotel, New York. H. S. Person, 29 West Thirty-ninth street, New York, is secretary.

Dec. 1-6—American Society of Mechanical Engineers. Fifty-first annual meeting at Engineering Societies building, New York. Calvin W. Rice, 29 West Thirty-ninth national exposition of power and

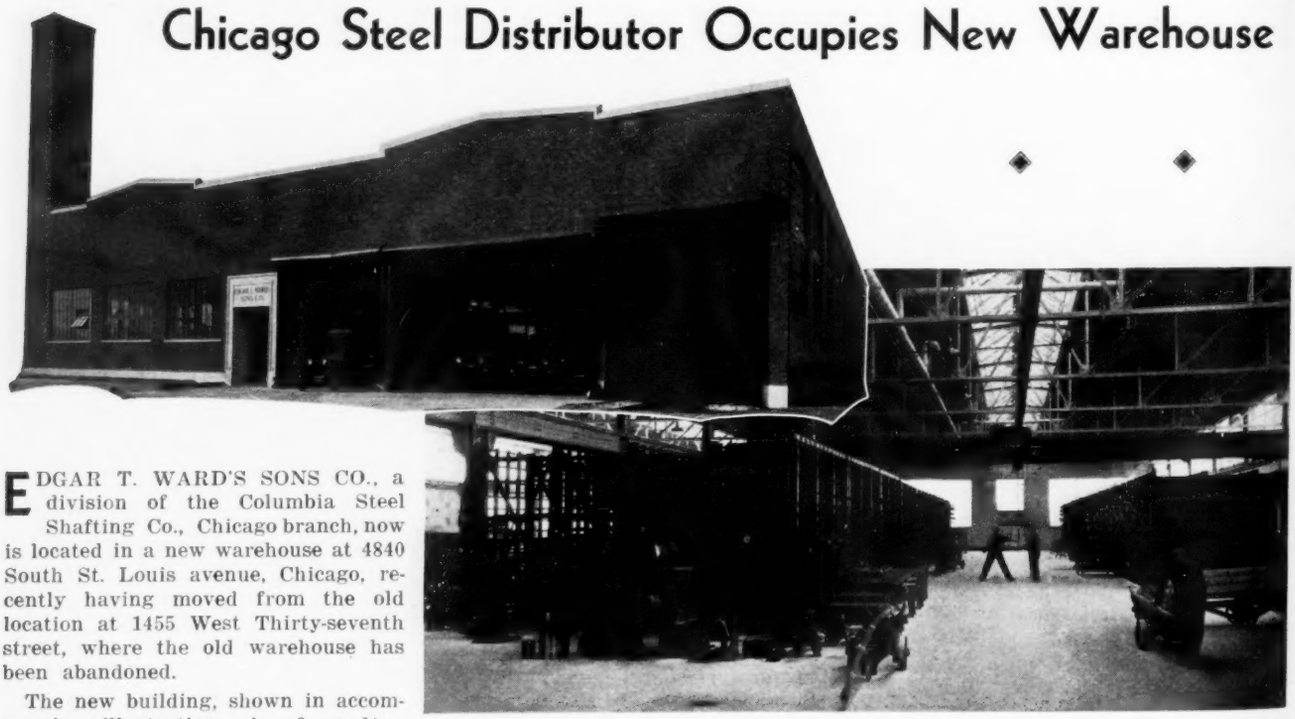
Dec. 1-6—National Power show. Ninth national exposition of power and mechanical engineering in Grand Central Palace, New York. Charles F. Roth, Grand Central Palace, New York, is manager.

Dec. 10—Malleable Iron Research institute. Annual meeting at Cleveland hotel, Cleveland. Robert E. Belt, 2013 Union Trust building, Cleveland, is secretary.

Dec. 11—American Standards association. Annual meeting at Engineering Societies building, New York. P. G. Agnew, 29 West Thirty-ninth street, New York, is secretary.

Dec. 12—Grinding Wheel Manufacturers Association of the United States and Canada. Annual meeting at Lafayette hotel, Buffalo, N. Y. Frank R. Henry, Simonds Worden White Co., Dayton, O., is secretary.

Chicago Steel Distributor Occupies New Warehouse



EDGAR T. WARD'S SONS CO., a division of the Columbia Steel Shafting Co., Chicago branch, now is located in a new warehouse at 4840 South St. Louis avenue, Chicago, recently having moved from the old location at 1455 West Thirty-seventh street, where the old warehouse has been abandoned.

The new building, shown in accompanying illustrations, is of modern fireproof construction and is supplied with all types of steel, ample in amounts to satisfy the needs of steel consumers in the Chicago territory. Aircraft steels, cold-finished steel bars and turned and polished shafting, cold-rolled strip steel and round edge flat wire, cold-drawn mechanical tubing, full-finished deep drawing sheets, high-silicon electrical sheets, music spring wire and polished drill rods, and Swedish cold-rolled steels are among the variety of products on hand.

A special construction feature in the warehouse is a section provided with a moisture-proof roof. In this space are stored the finest grades and finishes of steel, upon which excess moisture present in the air might exert a deteriorating or discoloring influence.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Cutting Tools

General observations on cutting tools used in machine shop practice, Part I, discussed by J. B. Rennie, in Edgar Allen News (England), November 1930, p. 745, 4 pp. 5 illusts.

Other conditions being equal, the straight nose roughing tool is preferable to the round nose tool. The latter distorts the chips, changes their form when sliding over the top surfaces, generating heat and absorbing power. On both straight and round nose tools it is desirable to have the cutting edges about parallel with the base line of the tool, or sloping backwards in rougher tools. The ideal shape of a cutting tool edge is a straight plan angle of 90 degrees as on bar tools. The article is accompanied by a full-page chart showing miscellaneous shapes of cutting tools.

—STEEL 11-27-30

Electric Forge Furnaces

Application of electric heat in the forging department of the Ford Motor Co., discussed in Electrical World, Nov. 15, 1930, p. 902, 3¾ pp., 5 illusts.

Temperatures necessary for forging steel vary from 1900 to 2450 degrees Fahr. Resistance rods used in the rod resistor type furnace are composed of silicon carbide to which is added in manufacture certain other materials to act as a binder and to provide the desired conductivity. Since the rods are designed to be worked at ordinary utilization voltages the need for a transformer at each furnace was removed, and because of their small mass the heating-up period was reduced to much less than an hour. The terminals are steam cooled by a syphon system, including a pair of water drums on top of the furnace. The 337-kilowatt units have a capacity of 900 pounds of metal brought up to 2350 degrees Fahr. an hour. Dies have a long life on metal electrically heated. Records have shown maximum die life of 2500 operations in an upsetting machine taking electrically heated stock. A broken rod may be replaced in about 20 minutes without shutting down the unit. The average life of the rods is rather indefinite, but about 900 hours is a conservative estimate.

—STEEL 11-27-30

FABRICATION:

Temperature Control

Methods for regulating temperatures in gas-fired equipment discussed by F. K. Whiteside, in Industrial Gas, November 1930, p. 9, 4 pp., 2 illusts.

Gas lends itself most readily to automatic control and there is practically no limit to the number of uses to which control equipment can be adapted. Temperature control equipment may be divided into three general classes; 1. Control only; 2. Indicating control; and 3. Recording control. The use of a recording instrument is the only practical method for determining the maximum variation in temperature and for obtaining a continuous checkup on the effectiveness of the control equipment. Automatic temperature control is closely related to the subject of temperature measurement which is of two types, mechanical and thermoelectric. Both types are described. Among other subjects discussed by the author are solenoid and motor-operated valves for controlling fuel input and proper location of thermocouples.

—STEEL 11-27-30

Welding Steel Castings

Application of welding for joining small components into a massive steel casting, proposed by I. H. Namack and H. C. Hobart, in Metal Progress, October 1930, p. 71. 4 pp., 3 illusts.

If instead of a large casting, the piece is made of component castings, then each part may be so molded and poured as to obtain the best results. Such a procedure eliminates large and expensive cores and avoids many associated difficulties. The cost of cleaning and chipping is reduced, and there will be fewer fins at the joining of core to core and to mold. All parts of the individual parts will be more accessible for cleaning.

—STEEL 11-27-30

PRODUCTION:

Steel Forgings

Physical properties of steel forgings and characteristics of alloys more commonly used in the design and production of forged parts, discussed by L. H. Fry, Part III, in Machine Design, November, 1930, p. 38, 3¼ pp., 3 illusts.

While one tension test for each treatment lot will be sufficient for the usual run of forgings, it may be desirable for special grade forgings to take one or more tests from each forging. For a given grade of forgings there should be a definite and balanced relation between the values found for the yield point, tensile strength, elongation in 2 inches and the reduction of area. The author presents a detailed account of the characteristics of manganese, silicon, molybdenum, nickel, chromium and vanadium.

—STEEL 11-27-30

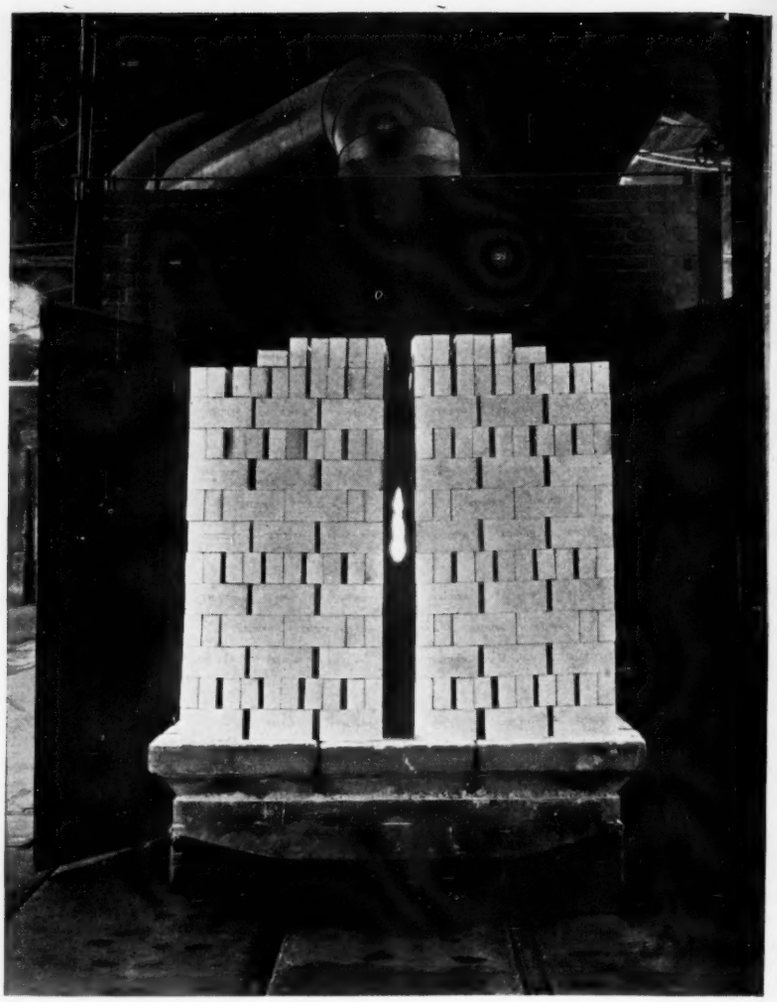
MISCELLANEOUS:

Specifications

Plan followed by the New York Central railroad in purchasing materials and supplies, discussed in American Standards association bulletin, October 1930, p. 24, 9 pp.

Specifications are prepared with care and skill and serve as guide books in manufacture. There are specifications for rail and track materials; lumber, ties and other forest products; fuel; commissary supplies; and, car and locomotive materials. In the latter branch, the purchasing is covered by about 100 specifications which begin with a brief but clear general description of the desired material and an explanitory statement that will assist the manufacturer to understand the intended uses for the material. They also include the enumeration of tests to which the material must be subjected. Various details considered in specifying rails, track fastenings, structural steel and wheels and in making service and shop tests are summarized.

—STEEL 11-27-30



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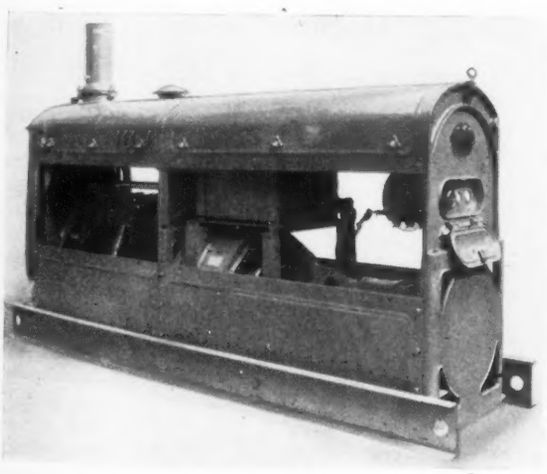
Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

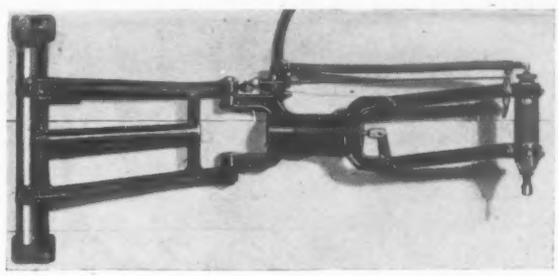
Pipe Line Welding Outfit Suits Field Conditions

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has placed on the market a new 600-ampere single-operator, engine-driven welder for pipe line service. This machine, shown in the accompanying illustration, is designed primarily for use with large size, high-speed, high-current, coated electrodes demanding high voltage arcs, but the application of a new flexible arc principle permits equally good operating characteristics and arc stability on the low current ranges with small electrodes. The machine will withstand severe field service where sustained loads and high currents are required over long periods.

The unit provides welding current up to 750 amperes. The generator is of the variable-voltage, constant-current type, operating at 1450 revolutions per minute. Current surges, occurring when striking the arc and while welding, are eliminated by a special principle in the design. The main generator frame fits directly into the engine flywheel housing, making it possible to use a single bearing flexibly-coupled generator. An over-size exciter for separately exciting the welding generator shunt field and for furnishing auxiliary power is overhung from the main generator bracket. Separate excitation is said to increase the efficiency and to simplify welding current control.



Designed for severe service encountered in the field on heavy pipe line work, this portable welding outfit will sustain loads up to 750 amperes over long periods



Portable air-driven riveting hammer has unique support and hold-down which provide wide working range and pressure to suit the job

Flexible Control Aids in Hammer Operation

Walcott Machine Co., Jackson, Mich., has begun the manufacture of a line of pneumatic riveting hammers featuring speed, portability, flexibility, and adaptability to a wide variety of assembly operations. One of the important features is the device which firmly holds the hammer in a vertical position, at the same time allowing flexibility and a wide working radius. When attached to the wall, as shown in the accompanying illustration, the device makes it possible to bring the tool to any point inside a half circle having a radius of 42 inches. When mounted on pedestal holder or post, its working range is increased to a three-quarter circle of the same radius. Additional elbow brackets will extend the range to cover work of almost any area. This holding device, with sensitive control, makes the hammer especially desirable for light work. It can be carried easily from one location to another, and the holding device slips into brackets which can be mounted at any point.

Speed and power of the blows are regulated by a throttle and the operator can vary the action from a light vibration to a force of 4000 blows a minute. To operate the hammer, the trigger is pulled and the peen is "floated" around the edge of the rivet. A pneumatic holddown automatically forces the peen down against the rivet the instant the trigger is pulled. This holddown is controlled by a valve which regulates the downward pressure to suit work.

There are two general types of the hammers, wall mounted and pedestal mounted, and each comes in three sizes, with heading capacities up to 5/32, ¼ and ⅜ inch, respectively. The air pressure required for operation of any model is 80 pounds per square inch.

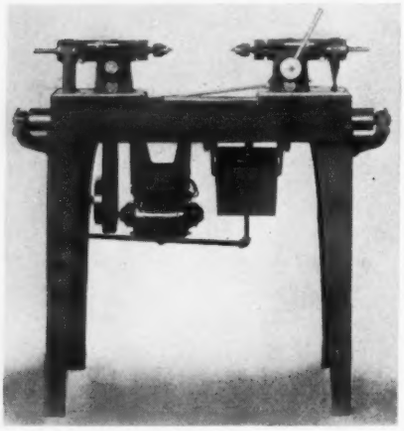
◆

Duplex Drilling Machine Covers Wide Range

Langelier Mfg. Co., Providence, R. I., has added to its line the horizontal duplex drilling machine shown in the accompanying illustration. This machine can be furnished with spindle speeds ranging from 1200 to 6000 revolutions per minute, to suit customers' requirements and will drill holes up to ⅝-inch diameter in steel. The distance from center line of spindles to table is 6⅝ inches and the two drilling heads can be adjusted along the table from a minimum of 3 inches between chuck ends up to a maximum of 16 inches. They are located and clamped by gibbed T slides.

The spindles are driven by open and crossed belts from drum pulleys at each end of a long jackshaft which is carried inside the bed on four ball

bearings. This in turn is belted to a motor mounted underneath on an adjustable swing bed plate. Spindles are hardened and ground steel and run in phosphor bronze bushings in feed sleeves sliding in the drilling heads, adjustable stops on the feed sleeves limiting drilling to a predetermined



Two holes up to ⅝-inch diameter are drilled simultaneously in steel

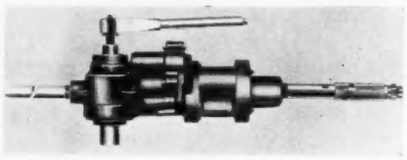
depth. The ball bearing drive pulleys are mounted on sleeve trunions clamped into the outer ends of the bores in the drilling heads. They carry driving collars which have two keys engaging splines in the ends of the spindles.

Both spindles are fed simultaneously by means of a connecting rod and levers mounted on the ends of pinion shafts in the drilling heads. Pinions on these shafts mesh with racks in the feed sleeves. The feed mechanism is operated by a hand lever mounted on the end of the pinion shaft in the right-hand drilling head. A reservoir is attached to the underside of the bed, from which oil is drawn by a gear pump mounted on a leg of the machine and delivered to each of the drills. The oil is caught by the flange around the bed and returned to the reservoir. The machine occupies 50 x 22 inches of floor space, is 44-inches high from floor to centerline of spindles, and weighs approximately 525 pounds.

◆

New Drill Is Designed for Heavy-Duty Work

Buckeye Portable Tool Co., Dayton, O., has put on the market a heavy-duty pneumatic drill and reamer which is designed to meet the requirements of structural steel work, shipyards, railroad shops, and builders of heavy equipment such as en-



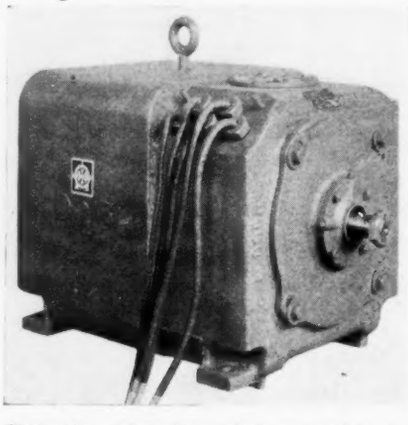
Pneumatic tool drills and reams holes, and also sets nuts in close quarters

gines, machine tools, etc. It is a powerful, compact tool, and its light weight in comparison with its capacity makes it well fitted for close-quarter work. In addition to performing drilling and reaming operations it can be used for setting nuts and driving stay bolts. It is equipped with a powerful air motor giving ample torque with ease of handling and absence of vibration. This tool, shown in an accompanying illustration, is furnished in two speeds, 150 and 200 revolutions per minute. It is 9 inches long overall, weighs 37 pounds, and has a feed of 2¼ inches.

◆

Explosion-Proof Motors Insure Maximum Safety

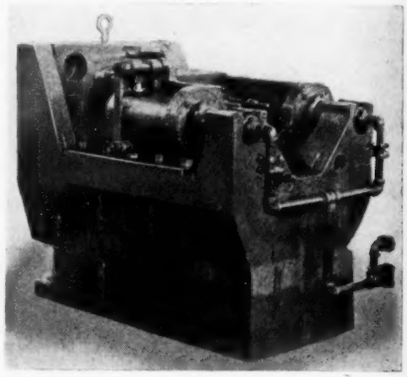
Reliance Electric & Engineering Co., 1042 Ivanhoe road, Cleveland, has developed an explosion-proof motor for use on coal mining machinery. The motor, which operates on direct current, is so constructed that even if an explosive mixture of natural gas and air should penetrate the case and explode therein, the case will withstand the pressure and will not communicate sparks or flame to the outer atmosphere. These motors are built in sizes suitable for driving coal loaders, coal cutters and other coal mining machinery. The accompanying illustration indicates the extremely rugged design of the explosion proof casing.



Rugged motor for mining machinery eliminates explosion hazard

Scrap Loss Is Cut Down by New Bar Push Pointer

Aetna-Standard Engineering Co., Youngstown, O., has designed a bar push pointer for use in connection with the chain type of bar drawing bench to cut down scrap loss in the cold drawing of bars. The pointer, an illustration of which accompanies this description, is designed so that the succeeding bars can be brought up to the dies before the preceding bars have completed the draw. This



Self-contained bar pointer saves material and operating time

enables the operator to utilize the drawing time for loading the bench.

The operator has complete control over the pointer and can stop the stroke at will. The pointer is a self-contained mechanism which can be installed readily with existing drawbenches. It cannot be overloaded to the breaking point. Grip operation is automatic and the grip holders and die plates can be quickly interchanged for single, double or triple drawing to meet the frequent size changes required during the day.

◆

Magnetic Separator Pulley Is of Simple Design

Cutler-Hammer Inc., Milwaukee, has designed a magnetic separator pulley, shown in an accompanying illustration, which features simple construction and better wearing qualities. The new pulley has only three major parts—a machined cast steel spool, the magnet coils and a coil shield. The magnet coils are wound on the steel spool and vacuum impregnated to make them moisture proof. The coil shield is then welded to the spool so that it completely encloses the coils. This coil shield is of corrosion-resisting metal which

Overshadowing

Even its Success for Tool Grinding ~

The Norton «B» Wheel Now for Snagging

WHAT is the Norton «B» Wheel? It is a new and exclusive development of the Norton Research Laboratories—an entirely different type of vitrified bond—known for identification as the «B» bond.

For tool and cutter grinding—work which most readily discloses any inequalities in wheel performance—the «B» Wheel has made a name for itself. «B» bond brings the same improved performance, the same remarkable uniformity to the snagging field—a field where variation in wheel performance has often been accepted as unavoidable.

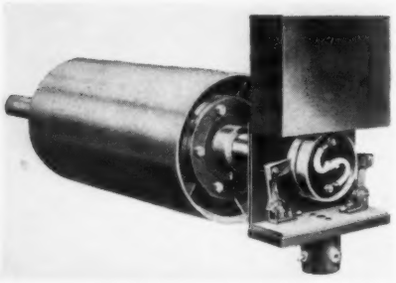
The «B» Wheel is truly a *better* snagging wheel—a snagging wheel made as precisely, as exactingly as the very fine, soft, high-precision wheel—and at no additional cost. It may be likened to an alarm clock made with fine watch precision.

Try the «B» Wheel for *your* snagging. Let it prove its worth by its improved action.

NORTON COMPANY
Worcester, Mass.

NORTON
GRINDING WHEELS

Of course All Norton B Wheels Are Made CONTROLLED STRUCTURE



Magnetic separator pulley features grit exclusion and shock protection

provides a tough, long-wearing, non-magnetic pulley surface.

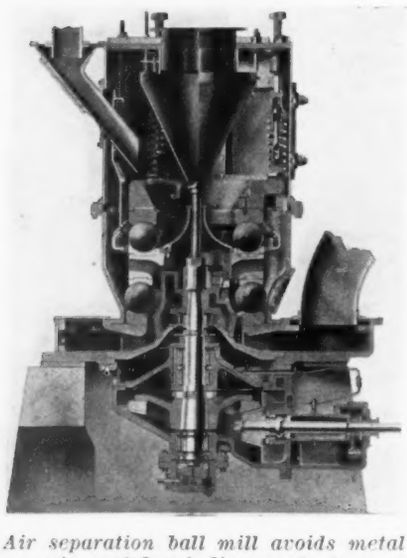
The commutating mechanism which conducts the current to the magnet coils, is mounted on one end of the pulley shaft. Heavy brass collector rings and carbon brushes assure contact at all times. A dust-proof cover protects the commutating mechanism from flying particles and also protects operators from accidental contact with live parts. The accompanying illustration shows the pulley with the commutator cover in raised position. These pulleys are made in 12-inch diameter size and in size lengths, from widths varying from 12 to 30 inches.

◆

Coal Pulverizer Resists Destructive Abrasion

Fuller Lehigh Co., Fullerton, Pa., has developed a coal pulverizer which has no metal-to-metal contact of grinding parts, therefore wear of these parts is confined to coal abrasion. The pulverizer, a cross section of which is shown in the accompanying illustration, is an air separation ball mill which uses the spherical ball and grinding ring principle of pulverizing in which fineness in not affected by wear of grinding parts.

Since pressure between balls and grinding ring is an important factor in obtaining fineness and large capacity, the new mill is so designed that this pressure is obtained independently of the mill speed. This feature, combined with the use of two full rows of balls grinding under high pressure and at low speed, results in a quiet and smooth-running mill giving high capacity and fineness.



Air separation ball mill avoids metal to metal grinding contacts

Light weight electric drills have 3/16-inch diameter capacity

Light Electric Drills Will Work in Close Quarters

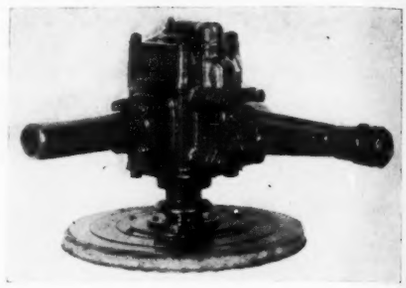
Stanley Electric Tool Co., New Britain, Conn., has brought out two new 3/16-inch electric drills which are unusually light in weight. These drills, one of which is shown in the accompanying illustration, are particularly adapted for working in cramped situations such as prevail in automobile or airplane assembly or furniture construction. The difference between the two models is in the housing; one being equipped with an aluminum alloy housing not liable to damage if dropped, while the other has a housing made of a special composition which insulates against heat, making a comfortable tool to handle when drilling continuously.

The drills are equipped with handles which can be put on or taken off as required. Motors can be furnished for voltages ranging from 32 to 250, speed of 2000 revolutions per minute being maintained under full load. Armature shafts are supported on large seal-type ball bearings, while radial ball bearings are used on each end to prevent side play in the chuck spindle. Gears are of nickel steel, specially heat treated.

◆

Air Driven Sander Has an Efficient Governor

Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, has placed on the market a new rotary pneumatic sander, shown in the accompanying illustration. This machine is equipped with two handles for convenience in dressing welded seams, for dressing down sheet metal work, cleaning castings, etc. Careful balancing of parts gives vibrationless operation.



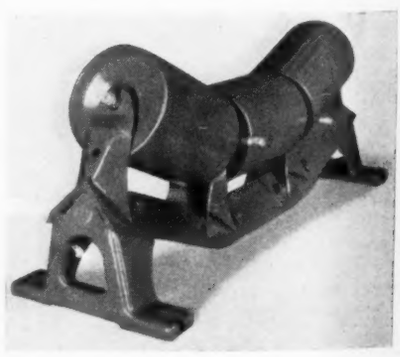
Governor control gives air economy on sanding and grinding work

The speed is controlled by a governor which opens the throttle to give necessary air at peak loads, and which throttles down the air when the load is light. This feature is said to result in marked economy on account of increasing the life and lowering maintenance costs of the tool, and by minimizing consumption of compressed air. The tool is of the center spindle type, with a speed of 4500 revolutions per minute. Its weight, exclusive of wheel or disk, is ten pounds and overall length is 8 inches. The spindle has a 5/8-inch 11 U.S.S. thread.

◆

Belt Conveyor Carriers Are of Rigid Construction

Stephens-Adamson Mfg. Co., Aurora, Ill., has brought out a new belt conveyor carrier which is of the three-roller, 20-degree trough design. As shown by the accompanying illustration, the construction is of heavy gage pressed steel, with the single ex-



Roller units are interchangeable on new belt conveyor carriers

ception of the end stand castings, making the carrier light in weight, strong, rigid, and practically unbreakable. Each roller turns upon two tapered roller bearings housed within an inner hub of steel tubing and protected by intermeshing labyrinth grease seals against penetration of grit and moisture. The bearings are large and are arranged to carry end thrust as well as radial loads. The inner hub extends the full length of each roller to maintain alignment of bearings. Provisions are made for adjusting and setting the bearings for proper clearance. Pressure lubrication is used there being an individual fitting for each bearing.

Roller Units Are Interchangeable

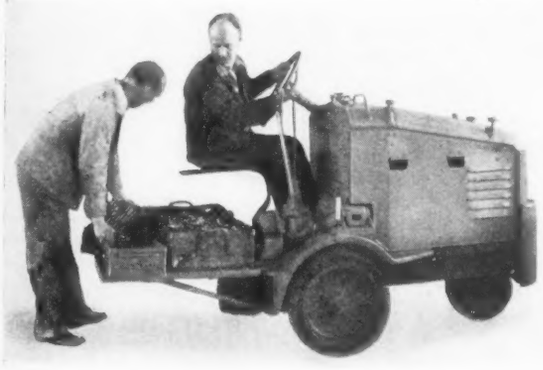
Each roller, with its bearings, shaft and grease seals, is a self-contained unit that can be interchanged easily with any other roller without disturbing the bearing adjustment. The cross member is formed and punched from a single structural steel angle. The standard pressed steel brackets mounted on this are interchangeable for all sizes of carriers. The angle is self-cleaning and eliminates any tendency for material to collect and hinder the free action of the rollers. The carriers are built in sizes for conveyor belts from 18 to 48 inches wide.

◆

Mechanical «Errand Boy» Has Numerous Uses

Clark Tructractor Co., Battle Creek, Mich., has designed a gas-operated stock chaser which is in effect a mechanical errand boy. As shown in the accompanying illustration, this is a sturdy 3-wheeled tractor equipped at the rear with a stout steel platform box 33½ inches wide by 29½ inches long, with a load capacity of 500 pounds.

This tractor has a turning radius of only 51 inches, and is useful in transporting tools, jigs and fixtures from the tool room to machines, in picking up special parts from storage, and for carrying mail, shop orders, job tickets, and requisitions from one department to another. An important feature is the ease with which the rear platform may be removed, thereby converting the machine into a factory tractor with standard trailer coupler, capable of hauling 25 tons of trailers through narrow aisles and along crowded platforms.



Stock chasing and other errand and delivery services common to industrial plants are speeded up by this sturdy 3-wheeled gas tractor truck

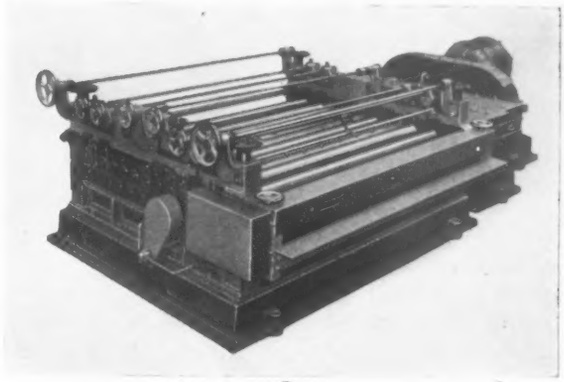
◆

Sheet Leveler Is Designed for 84-Inch Material

Sutton Engineering Co., Park building, Pittsburgh, announces a new sheet leveler of 84-inch capacity. This machine, shown in the accompanying illustration, has 21 leveling rolls, these being 5 inches in diameter and made of special steel, hardened and ground. There are also one pair of cleaning rolls and two pairs of pinch rolls, one at entering end and one at delivery end.

The rolls are driven through flexible spindles by means of accurately cut herringbone and helical gears, all of which are totally inclosed and run in oil. This system of gearing eliminates chatter and backlash, an important consideration in a machine of this kind. The rolls are held down by spring tension and the top housing is designed so that the rolls can be crossed to remove crosswise strains. Individual rolls can be adjusted to give exactly the correct amount of local pressure. Adjustments are made through worm and worm wheel, or bevel gear operated mechanisms. To withstand maximum strains the frame is of particularly heavy construction.

The machine ordinarily is equipped for grease gun lubrication, but a centralized system can be furnished. Oil pumps, sprays and oil pan for oiling sheets are furnished.



Wide gage sheet leveler has important design features, including flexible spindles, herringbone gears, and individual pressure and crosswise adjustments

◆

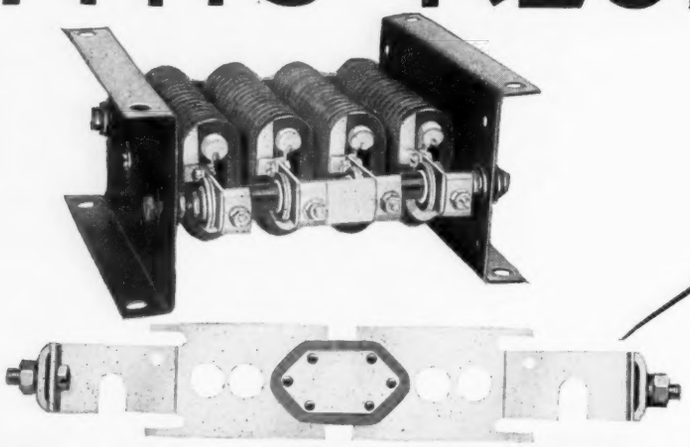
New X-Ray Tube Shortens Time of Exposure

General Electric Co., Schenectady, N. Y., has developed an x-ray tube which operates under a pressure of 500,000 volts, more than twice as high a voltage as is being used at present, and which will permit radiography of thicker metals and shortens times of exposure. Such an increase in voltage, and hence increase in penetrating power of the rays, was made possible by a system of "cascading" the tube.

"Cascade" or Sectional Design

The 500,000-volt X-ray tube is built in two sections. In previous work in cathode-ray tube development it was found that tubes can be built for very high voltages by the use of a cascade or sectional system, and that by this method there appears to be no limit to the voltage which can be used. The target replaces the "window" of the cathode-ray tube so that, instead of cathode rays being emitted by the tube through such a "window," x-rays of exceedingly high penetrability are generated by the impact of the electrons on the target.

This RESISTOR has BACKBONE



WHEN you examine this new G-E unbreakable resistor, you know instantly why we say that it has BACKBONE—plenty of it!

Pictured above you see a unit box of four resistor units, and the strong, center-insulated support plate. Note that this construction furnishes a rigid support for terminals—in fact, the ends of the support plate are the terminals. And note particularly these other features: edgewise-wound, elongated windings permitting greater length of ribbon—hence increased radiating surface; compact units, readily accessible and easy to change if desired; fired alumina insulation; noncorrodible resistive material; unbreakable—an extremely valuable characteristic under conditions of intensive vibration.

Everything that you would expect to find in a good heavy-duty resistor is here. Examine it at your earliest opportunity; write your nearest G-E office for publication GEA-1295, containing full details.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

301-54

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Railroad Needs Invigorate Market

Requirements Placed and Pending Are for 650,000 Tons—Most Sheet, Strip and Wire Prices Extended—Stability of Price an Aid—More Iron Bought

RAILROAD purchases and inquiries involving upward of 650,000 tons of steel and continued earnest endeavor of producers to stabilize prices lend the most comprehensive sweep in weeks to the steel market, obscuring somewhat the fact that steel specifications for immediate rolling are moderately lighter and the mills are pressed to maintain a 45 per cent operating rate.

Definite car commitments of the week include rebuilding of 3000 by the Northern Pacific, construction of 793 by the Missouri Pacific, and award of 300 by the Chicago Great Western to Pullman, calling for 31,000 tons of steel. Inquiries of the Seaboard By-Products Coke Corp. for 248 hoppers, Delaware & Hudson for rebuilding several hundred cars, and Youngstown Sheet & Tube Co. for 40 bodies add 6000 tons.

New York Central, inquiring for 50 locomotives taking 4000 tons of steel, is expected in the market shortly for 10,000 to 15,000 cars, into whose construction 140,000 to 210,000 tons of steel would enter. The New York Central in a few days will distribute its 1931 rails, estimated at 175,000 tons, now that rail mills have held prices.

The Pennsylvania, which has supplemented its recent 15,000-ton car steel order with one for 20,000 tons, is also a prospective nearby rail buyer, probably of 150,000 tons. A Wabash award of 12,000 tons is in prospect. The 75,000 tons of rails for the Baltimore & Ohio and 41,748 tons for the Erie have been entered.

Chief beneficiary of this railroad business will be the plate mills, which in the East this week have booked 12,000 tons for a car builder and 4200 tons for a gas holder. Pipe skelp releases are better at Chicago, where 10,000 tons of refinery tank work is up. Inland Waterways Corp. may buy 50 barges, requiring 25,000 tons of plates, while an award nears on four Pacific Mail liners, taking 24,000 tons.

Structural steel orders this week, at 34,537 tons, exceed both the 29,042 tons of last week and 21,972 tons of a year ago. Three new subway sections in New York, totaling 20,800 tons, make 35,600 tons of subway work now pending. Bids are in on 15,000 tons for an elevated roadway in New York. Carbon bar orders at Chicago are running 15 per cent ahead of October.

More interest is displayed in pig iron at Cleveland, New York, Toronto, Chicago, and St. Louis, with a firmer price attitude apparent. Coke remains quiet and unchanged. Scrap is down 25 cents for the steel grade at Pittsburgh on a purchase of 10,000 tons by a steelworks, and in other centers more stability is manifest.

Important makers of sheets and strip have announced first quarter schedules which in most classifications continue present levels and in a few represent advances or $1 to $2 per ton. First quarter asking prices at Pittsburgh will be 3.30c on full-finished, 3.60c on furniture, 3.00c on galvanized, 2.35c to 2.45c on black, 1.90c to 2.00c on blue annealed plates, 2.05c to 2.15c on blue annealed sheets.

On hot-rolled strip 1.55c to 1.65c is asked on definite first-quarter commitments, with cold-rolled usually 2.35c. On wire nails $1.90 to jobbers has been reaffirmed, with 2.30c continued on wire. In the East an effort is being made to put heavy steel buyers in one price class, preferred quotations on shapes, for example, being withdrawn Dec. 10.

Lake shipments of iron ore are completed for the season, at 46,582,982 gross tons. Plus the all-rail movement, the season's tonnage is 47,232,982, 28.6 per cent below 1929 and the lowest since 1924.

Steelmaking operations are unchanged this week at 43-45 per cent, a slight rise at Chicago nullifying a decline at Youngstown. By districts operating percentages are: Chicago 47, Buffalo and Youngstown 46, Pittsburgh and eastern Pennsylvania 45, Cleveland 44, Birmingham 43.

October exports of iron and steel products, at 131,850 tons, gained 639 tons over September. Imports declined 1941 tons to 38,344 tons.

STEEL's market composite continues unchanged this week at its all-time low of $31.86.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Nov. 26, 1930)	**$31.86**
Last week (Nov. 19, 1930)	**31.86**
One month ago (October, 1930)	**32.26**
Three months ago (August, 1930)	**32.99**
One year ago (November 1929)	**36.03**
Ten years ago (November 1920)	**63.75**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Nov. 26, 1930	Oct. 1930	Aug. 1930	Nov. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	19.36	20.26	20.76
Basic, valley	17.00	17.00	18.00	18.50
Basic, eastern del. eastern Pa.	17.50	17.50	18.00	19.75
No. 2 foundry, del. Pittsburgh	18.26	18.46	19.26	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del. Phila.	19.26	19.26	19.76	22.26
Malleable, valley	17.50	17.80	18.50	19.00
Malleable, Chicago	17.50	17.50	17.50	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.93	18.63	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79
COKE				
Connellsville furnace, ovens	2.55	2.60	2.50	2.65
Connellsville foundry, ovens	3.50	3.50	3.50	3.55
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	31.00	35.00
Sheets bars, open-hearth, Pitts.	31.00	31.00	31.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	31.00	35.00
Wire rods, Pittsburgh	36.00	36.00	36.00	40.00

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

	Nov. 26, 1930	Oct. 1930	Aug. 1930	Nov. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.65	1.90
Steel bars, Chicago	1.70	1.70	1.75	2.00
Steel bars, Philadelphia	1.89	1.89	1.94	2.23
Iron bars, Chicago	1.70	1.70	1.75	2.00
Shapes, Pittsburgh	1.60	1.60	1.65	1.90
Shapes, Philadelphia	1.76	1.76	1.66	1.91
Shapes, Chicago	1.70	1.70	1.75	2.00
Tank plates, Pittsburgh	1.60	1.60	1.65	1.90
Tank plates, Philadelphia	1.80½	1.805	1.805	2.10
Tank plates, Chicago	1.70	1.70	1.75	2.00
Sheets, blue anl., No. 13, Pitts.	2.05	2.15	2.15	2.35
Sheets, black, No. 24, Pitts.	2.35	2.40	2.50	2.75
Sheets, gal., No. 24, Pittsburgh	2.90	3.00	3.10	3.45
Sheets, black, No. 24, Chicago	2.50	2.60	2.60	2.95
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.15	3.20	3.20	3.65
Plain wire, Pittsburgh	2.30	2.30	2.30	2.40
Wire nails, Pittsburgh	1.90	2.00	2.05	2.40
Tin plate, per base box, Pitts.	5.00	5.00	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	12.75	14.80	15.20	16.30
Heavy melting steel, eastern Pa.	11.50	12.00	12.625	15.125
Heavy melting steel, Chicago	10.00	11.55	12.00	13.05
No. 1 wrought, eastern Pa.	13.50	14.25	14.25	16.25
No. 1 wrought, Chicago	10.00	10.95	11.25	13.85
Rails for rolling, Chicago	13.00	14.10	14.50	15.30

Sheets

Market Firmer as Prices Are Announced for First Quarter—Improvement in Sales Slight

SHEET PRICES, PAGE 69

Pittsburgh—Sheet tonnage shows a slight improvement coincident with the announcement by producers of minimum prices on new business for the remainder of the year and the first quarter of 1931. These prices are 2.35c on black sheets, though 2.45c also is quoted; 3.00c on galvanized, 2.05c on 13 gage blue annealed sheets, 1.90c on blue annealed plates, 3.30c on autobody, and 3.60c on furniture sheets. Continuous mill sheets have been set at 1.75c for 10 gage and 1.90c for 13 gage. With one exception these prices are unchanged from the recent market. Autobody formerly had been quoted nominally at 3.40c. The foregoing minimum prices conform to those just announced for first quarter by the American Sheet & Tin Plate Co. This interest's full range follows: Blue annealed plates 1.90c to 2.00c; blue annealed sheets 2.05c to 2.15c; black 2.35c to 2.45c, galvanized 3.00c; autobody 3.30c, and furniture 3.60c. Incoming business still is light but is improved over the low activity of the past several weeks.

New York—The announcement by the leading interest of sheet prices for first quarter indicates little change in existing levels, except for galvanized on which the minimum will be 3.00c. The minimum on black will be 2.35c; on blue annealed plates 1.90c; on blue annealed sheets 2.05c. Meanwhile the market on galvanized is 2.90c to 3.00c.

Philadelphia—Sheet demand is smaller but prices appear firmer. Makers have set 3.00c, Pittsburgh, in most instances as minimum for galvanized sheets. Black are 2.35c to 2.45c. Blue annealed continue 1.90c to 2.00c for heavy gages, and 2.05c to 2.15c for light. The wide gap between autobody at 3.30c, Pittsburgh, and furniture stock at 3.60c has caused some comment here.

Youngstown, O.—Moving toward the usual buyers' inventory season independent sheet mills report continued quiet trading. Some fairly good orders for black and galvanized are coming to mills from a wide variety of consumers. Mills continue operating at an average of 50 per cent. Some open-shop mills here are distributing their work among mill crews rolling common sheets, but as Amalgamated association rules prevent such a system in union mills the latter are not able to follow. Prices appear to be firming up. Orders are coming to mills at 2.45c, Pittsburgh, for common black in small lots, although the price of 2.35c also is noted in some instances. Galvanized are 2.90c to 3.00c, and autobody 3.30c to 3.40c.

Cleveland—Sheet orders are fewer while consumption is about on the same level as for several weeks. A few automotive users are purchasing fair amounts but the expected increase in their orders has not materialized. More users have purchased full finished at 3.30c, Pittsburgh, although sellers still have a nominal price of 3.40c. Galvanized are 2.90c to 3.00c, with some mills endeavoring to hold 3.00c as minimum, without booking tonnage. Blue annealed are 1.90c to 2.05c, depending upon gage. Black are 2.35c, Pittsburgh, and metal furniture 3.60c.

Chicago—Sheet buyers await with interest the attitude of other producers in regard to the first quarter price announcement by Inland Steel Co., which extends present prices except for No. 24 black sheets, which are quoted at 2.55c, Gary and Indiana Harbor, as against the present range of 2.45c to 2.55c. No sales and few inquiries have been made for first quarter.

Cincinnati—Specifications for sheets in this district show considerable improvement, chiefly attributed its automotive demand. The Newport Rolling Mill Co. has announced these quotations for first quarter: No. 10 blue annealed, 2.00c; No. 13, 2.15c; black, 2.35c; galvanized, 3.00c, base, Pittsburgh.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c to 2.45c
Philadelphia, delivered	2.64c to 2.74c
Gary, Indiana Harbor	2.45c to 2.55c
Chicago, delivered	2.50c to 2.60c
Birmingham, base	2.60c
St. Louis, del.	2.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.65c to 2.75c
Gary, base	2.75c to 2.85c

GALVANIZED NO. 24

Pittsburgh, base	2.90c to 3.00c
Philadelphia, delivered	3.29c
Gary Indiana Harbor	3.10c
Chicago, delivered	3.15c
Birmingham, base	3.05c to 3.15c
St. Louis, del.	3.35½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.05c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.34c to 2.44c
Birmingham	2.20c to 2.30c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.19c to 2.29c
St. Louis, delivered	2.35½c
Birmingham	2.05c to 2.15c

AUTOMOBILE NO. 20

Pittsburgh, base	3.30c

FURNITURE NO. 24

Pittsburgh, patent leveled	3.60c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	5.00
Gary, Ind., base 10 cents higher.	
Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.05c and 2.15c
Galvanized wire	2.50c and 2.60c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c
Philadelphia, del.	1.80½c
New York, del.	1.88c
Boston, del.	2.00c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.10c to 2.20c
St. Louis, del.	2.00½c

Structural Shapes

Base, Pittsburgh	1.60c
Philadelphia, del.	1.76c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.10c to 2.20c
Cleve. base, local del.	1.65c
Do, outside delivery	1.65c
Philadelphia, del.	1.89c
New York, delivered	1.93c to 1.98c
Boston, delivered	2.00c to 2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 1.98c
Philadelphia, delivered	1.89c to 1.94c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet	1.70c to 1.80c
Chi., rails steel	1.50c to 1.60c
Chi. rail steel, road and bridge work	1.65c to 1.75c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.00c to 2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni	1.05
2100	0.55	5100 .80-1.10 Cr.	0.45
2300	1.50		
2500	2.25	5100 Chr. spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Chr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25 Mo.	0.50	9250 (flats)	0.25
4600.20 30 mo.		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.65c to 1.70c
Hot strip 6 1/16 to 24-in. Pitts.	1.55c to 1.60c
Hot strip, bands 6 in. and under, Chicago	1.80c
Do. 6 1/16 to 24 in.	1.70c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.35c
Worcester, 3 tons, over	2.50c to 2.60c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00 to 41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do. less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c

Bars

Market Holding Position in Face of Little Interest—Buying Shows Some Gains

BAR PRICES, PAGE 69

Chicago—Bar products specifications are more than holding their gains. One producer finds November shipping orders equal to the first 25 days of November, 1929, and 15 to 20 per cent ahead of October, this year, at the same time reporting general heavy finished steel specifications now the highest in about 90 days. Several automotive accounts have helped cold finished demand, while heavier specifications for pipe line work have added to the plate volume. Several buyers are inquiring for first quarter, but no price policy is being announced. Implement buying shows no improvement, but expectations grow more encouraging. Soft steel bars are 1.70c, mills. Rail steel commercial bar shapes are 1.65c, Chicago Heights.

New York—Steel bars continue at 1.60c to 1.65c, Pittsburgh, with trading light and prompt shipments available in most cases.

Some sellers here are checking tonnage still due on outstanding steel bar contracts in anticipation of an advance for the first quarter.

Philadelphia — Specifications for soft steel bars the past week have been larger than usual, with some increase from automotive concerns. In this district the price seems firm at 1.60c, Pittsburgh.

Pittsburgh—Little change is noted in steel bar demand, which remains seasonally light. The market shows a steady tone at 1.60c. Producers defer announcement of the price for first quarter and so far little interest is shown by consumers in future tonnage.

Cleveland—With possibly one exception, outside hot-rolled carbon bar mills now quote 1.65c, Cleveland, or 1.60c, Pittsburgh, whichever base is favorable to buyers' location. Local mills name 1.65c, Cleveland, base for local delivery and the latter figure is more prevalent on outside lots, all 1.55c prices having been withdrawn except on possible scale contracts. Demand generally is easing off. However, one leading seller reports a high tonnage week in new orders, largely from auto parts makers and several adjacent automobile manufacturers. General run of buyers, nevertheless, pare down specifications aiming at the lowest inventories in their histories. To that end they use all material on hand.

Division of simplified practice, department of commerce, has extended unchanged for one year its standard for steel lockers.

Cold-Finished Bars Feel Slight Automotive Demand

Cold-Finished Prices, Page 69

Pittsburgh — Cold-finished steel bars are moving in slightly larger lots to some automotive interests as the result of production on new models. Activity generally lacks improvement, however, since a month ago. Price announcements for the first quarter are lacking and the market continues 2.00c to 2.10c.

Cleveland—Cold-finished bar producers find an increasing tendency to hold down specifications for inventory-taking. Stocks are low everywhere as a consequence and for that reason a general pickup is expected after Jan. 1. Automotive consumption is about on a par with October, some taking more but some taking less. The 2.00c to 2.10c, Cleveland, price range continues.

Baldwin May Rent Engines

Baldwin Locomotive Works, Eddystone, Pa., is understood to have plans for the renting of locomotives. This would enable financially weak railroads to have the use of heavy motive power.

Plates

Tank, Car and Barge Work Feature Market—Shipments for Pipe Increase—Prices Steady

PLATE PRICES, PAGE 69

New York—Plates are unchanged at 1.70c, Coatesville, Pa., on carload lots, with less than carload lots going at 1.75c. Current demand is slack, but the outlook is more encouraging. Early award is expected of the four Pacific Mail line boats, requiring approximately 24,000 tons of steel, of which two-thirds will be plates. The Federal Shipbuilding Co., as previously reported, was again low on this contract. The New York Central is contemplating the purchase of a large number of freight cars and locomotives. About 100 of the latter will be purchased, it is said. The locomotives would require close to 4000 tons of plates. Tank work is quiet.

Three hundred tons of plates will be required for a ferry awarded by the local department of plants and structures to United Dry Docks Inc.

Philadelphia—Plates are firmer at 1.70c, base, Coatesville, Pa., fewer special prices being quoted. Business sustains mill operations at 40 to 50 per cent. The Pennsylvania railroad placed 20,000 tons of plates, shapes and bars with Pittsburgh mills and one eastern mill. An eastern car plant awarded 12,000 tons of plates, shapes and bars to eastern mills. Cruse-Kemper Co., Ambler, Pa., booked a gas holder for Philadelphia Gas Works, West Conshohocken, Pa., which will take 4200 tons of plates, sheets, shapes and bars, to be furnished by eastern mills. Certain oil companies have inquiries out for 5000 to 6000 tons of plates for various uses and locations.

Pittsburgh — Plate tonnage is holding fairly well with demand made up mainly of miscellaneous requirements. Demand from lapweld pipe producers is declining and improvement is lacking in buying by freight car and barge builders. Plates are steady at 1.60c, Pittsburgh. The Inland Waterways Corp. is expected to place 50 barges requiring 25,000 to 28,000 tons of plates and shapes before the end of the year. Definite inquiry for this equipment is looked for shortly.

Washington—The navy department awarded a contract Nov. 25 to the Worth Steel Co., Claymont, Del., to supply 5,694,000 pounds of steel plate to be used in construction of light cruiser No. 38 at the Mare island navy yard, Calif. The company bid $104,033, which figures out to about 1.827c per pound.

Cleveland—Plate orders are scarce, and at best are small for tank, boiler and bridge makers. Inquiries and requests for estimates are fairly numerous, indicating a current underlying demand slow on commitment. Prices are firm at 1.60c, Pittsburgh, the most encouraging feature to the market. Few orders exceed 100 tons. Tank and boiler manufacturers seem

loath to close on plate tonnages until consumer orders are definitely placed.

Chicago—Tank fabricators in this district are submitting bids on 10,000 to 15,000 tons for miscellaneous refinery work in western Texas. Tank work awarded totals 500 tons in small lots. Heavier shipments of plate skelp for pipe line work, amounting to over 10,000 tons weekly from the Chicago district, are contributing to the increase in specifications for heavy finished material. Several buyers want first quarter coverage. Plate mill operations are about 70 per cent. Quotations are 1.70c, Chicago.

Contracts Placed

20,000 tons, plates, shapes and bars, Pennsylvania railroad, for 1500 new gondolas, to Pittsburgh district mills and one eastern mill.

12,000 tons, plates, shapes and bars, unidentified eastern car plant, to eastern mills.

4200 tons, plates, sheets, shapes and bars, gas holder, Philadelphia Gas Works, West Conshohocken, Pa., to Cruse-Kemper Co., Ambler, Pa.

1800 tons, plus 700 tons of shapes, 600 steel underframes for Pacific Fruit Express, jointly to Western Pipe & Steel Co., Los Angeles, and Pacific Car & Foundry Co., Seattle.

Contracts Pending

5000 to 6000 tons, various oil companies in the East.

3000 tons, two lots of storage tanks, Phillips Petroleum Co., Tulsa, Okla.

300 tons, sheet piling, Reno-on-the-Lake development near Toledo, O.; J. H. Berkebile & Sons Co., Toledo., low bidder.

243 tons, two tanks at Boulder City, Nev., for United States bureau of public roads; bids Dec. 12 at Denver.

Railroads

Car Activity Reviving—New York Central Contemplates 15,000—116,748 Tons Rails Placed

TRACK MATERIAL PRICES, PAGE 69

New York—Persistent reports that New York Central will purchase 10,000 to 15,000 freight cars and its inquiry for 50 locomotives overshadow other developments in the eastern car market. It is estimated the car requirements will take between 140,000 and 210,000 tons of steel. Such inquiry would exceed by far any issued since early this year, when the Van Sweringen interests closed on more than 11,000 freight cars. It also is reliably reported that Illinois Central has revived its list of 2200 freight cars.

Rails are more active with 116,748 tons placed, 75,000 tons for Baltimore & Ohio, and 41,748 tons for Erie.

Approximately 2500 freight cars are actively pending at present. Delaware & Hudson will rebuild several hundred freight cars, taking 3000 tons of steel.

Philadelphia—In addition to Pittsburgh mills, one eastern maker shared in the distribution by Pennsylvania railroad of 20,000 tons of plates, shapes and bars for 1500 new gondolas. Other mills also are expected to get a portion. An eastern car plant placed 12,000 tons of plates, shapes and bars. Pennsylvania railroad's rail inquiry is likely to come out within the next two weeks and is expected to involve 150,000 tons.

Pittsburgh—Rail orders of Baltimore & Ohio and Erie railroads, 116,748 tons, place 67,698 tons with Carnegie Steel Co. here. The two orders are about 15,000 tons smaller than a year ago. No action has been taken on fastenings to accompany these rails. The market on tie plates now is $39 as the result of recent shading of the $41.50 price in Chicago.

Buffalo—It is expected here that a large portion of Bethlehem Steel Co.'s share of Erie railroad's order for rails will be rolled at Lackawanna, N. Y. A general improvement in the operation of district rail mills is forecast for the first quarter of next year as compared with 1930 averages.

Chicago—No further information appears from western railroads as to whether remaining rail inquiry will be issued before the end of the year. Wabash is expected to close shortly on the 12,000 tons before the market for a time. Street car line extensions in Chicago will call for a round tonnage of track accessories. Purchases will be extended over a long period and tonnage now is being estimated.

Track fastenings' sales in the week just closed amounted to 1500 tons, including several miscellaneous lots of rail joints, spikes, bolts, tie plates and angle bars. Rail mill operations are slightly above 30 per cent. Western rail mills will get about 20,000 tons of the recent Erie and Baltimore & Ohio rail orders.

Northern Pacific is to rebuild 3000 cars at St. Paul and elsewhere, involving an expenditure of $4,500,000. This constitutes the largest car rebuilding program that road ever has undertaken. The program includes the rebuilding of 1000 each refrigerator and box cars and the construction of 500 coal cars into box cars and 500 box cars into livestock cars. About 20,000 tons of fabricated steel, 2700 tons of iron and steel castings, and 3000 tons of forgings will be required.

Birmingham, Ala.—Rail mills still await order accumulations before resuming. Car shops of the Pullman Car & Mfg. Corp. will not resume until early 1931.

Car Orders Placed

Canadian National, 250 refrigerator cars, to own shops, Winnipeg, Man.

Chicago Great Western, 300 70-ton hopper bottom coal cars, to Pullman Car & Mfg. Corp., Chicago; second order placed by that road in last 60 days.

Fruit Growers Express, 100 steel underframes for refrigerator, to the Greenville Steel Car Co.

Missouri Pacific, 793 freight cars, to own shops; of this number, 168 will be single sheathed 40-ton box cars, equipped with old trucks, and the remaining 625 will be 50-ton gondola car bodies, equipped with old trucks; the latter work will be done at the De Soto, Mo., shops and the former at the San Antonio, Tex., shops.

Western Fruit Express, 100 steel underframes for refrigerator cars, to the Seims-Stembel Car Co., subsidiary of the Standard Steel Car Co.

Rail Orders Placed

Baltimore & Ohio, 75,000 tons rails; 46,000 tons, to Carnegie Steel Co., Pittsburgh; 19,000 tons, to Bethlehem Steel Co., Bethlehem, Pa.; 5500 tons, to Illinois Steel Co., Chicago; and 4500 tons, to Inland Steel Co., Chicago.

Erie, 41,748 tons, 1931 rail requirements: 21,698 tons to Carnegie Steel Co., Pittsburgh; 9650 tons to Illinois Steel Co., Chicago; 3200 tons to Inland Steel Co., Chicago, and 7200 tons to Bethlehem Steel Co., Bethlehem, Pa.

Car Orders Pending

Delaware & Hudson, to rebuild several hundred freight cars requiring 3000 tons of steel; bids being taken.

Fruit Growers Express, 200 underframes; inquiry withdrawn following award of 100 to Greenville Steel Car Co.

Illinois Central, 2200 cars, inquiry to be revived.

New York Central, 10,000 to 15,000 freight cars, contemplated; between 140 000 and 210,000 tons of steel would be involved.

Northern Pacific, to rebuild 1000 each refrigerator and box cars, and make 500 coal cars into box cars, and 500 box cars into livestock cars, at St. Paul and other shops.

Seaboard By-Products Coke Co., Pittsburgh, 248 55-ton hopper cars.

Youngstown Sheet & Tube Co., Youngstown, O., 20 to 40 gondola bodies.

Locomotives Placed

Canadian National, 10 locomotives, to own shops, Winnipeg, Man.

Locomotives Pending

New York Central, 50 Hudson type locomotives, to cost approximately $5,000,000.

Structural Shapes

Firming Prices Bring Lettings—8500 Tons of Transmission Towers Help Total—Pending List Augmented by Three New York Subways, 20,800 Tons

STRUCTURAL SHAPE PRICES, PAGE 69

New York—Three new subway sections are out making five pending, calling for 35,600 tons of shapes. Bids are in on two sections, 14,800 tons. Several apartments have been closed and several others are up. Bids are in on a third section, West Side elevated highway, 15,000 tons.

Worcester, Mass.—L. W. Briggs & Co., architects, have the contract for plans and specifications of a $2,000,000 auditorium. Their plan in association with F. G. Hirons of New York was awarded the prize.

Boston—Structural shape demand is developing quietly with a slightly firmer price trend.

Philadelphia—If present attitude of mills is maintained the shape market here shortly will arrive at the revolutionary market situation where one price will apply to all buyers irrespective of size or class. Large shape users have been advised by larger mills that old prices will apply only to old projects and that they will be good only to Dec. 10. In the meantime large mills are quoting 1.70c, nearest mill, on plain standard shapes, in connection with all new business.

Pittsburgh—Demand for fabricated structural steel is lighter than a month ago with specifications for plain material off slightly since Nov. 1. The market is holding at 1.60c, Pittsburgh. Inquiry is fair but local awards are small.

Buffalo—An improvement is seen for the first quarter of next year in the structural line. Pending tonnage to be placed then now totals between 15,000 and 20,000 tons.

Cleveland—Shape market sentiment is mixed. Some owners believe now is the time to buy and are putting out fresh inquiries or reviving old ones. Others are withdrawing work on architects' boards, and last week bids on the state bridge at Painesville, O., involving several hundred tons were returned unopened and the project postponed. In the indefinite future considerable grade crossing elimination work will be done in Ohio-Michigan-New York territory, more than $12,000,000 being slated for early 1931 consideration in Detroit. New inquiry here is nil. Plain material is 1.60c, Pittsburgh, but some of the successful bids on jobs recently up indicate a variance of 20 per cent or more between the high and the low.

Chicago—Structural steel lettings of about 3000 tons include a 400-ton school project in the Chicago district and 1400 tons of railroad work. Inquiries, including the 3100-ton capitol building at Baton Rouge, La., and 2000 tons in Tennessee highway bridges, amount to 14,000 tons. Bids will be received Dec. 9 on 2700 tons for the Wabash river bridge at Mt. Carmel, Ill. Bids have been tabulated for the 400-ton bank building in Oklahoma City. Structural mill operations are about 50 per cent, with specifications showing moderate gains. Plain material is quoted 1.70c, base.

Birmingham, Ala.—Shape awards are numerous in lots less than 100 tons at a time. Mills confidently expect to continue their 5-day week basis.

Contracts Placed

4340 tons, transmission towers, Safe Harbor Water Power Corp., Safe Harbor, Pa., to Blaw-Knox Co., Blawnox, Pa.

4160 tons, transmission towers, Union Electric Light & Power Co., Bagnelle, Mo., to McClintic-Marshall Co., Pittsburgh.

3770 tons, Hotel Meurice, Central Park south, New York, to Fort Pitt Bridge Works Co., Pittsburgh; H. K. Ferguson Co., Cleveland, general contractor; listed last week as going to unidentified fabricator.

3500 tons, Burrard bridge, Vancouver, B. C., to Dominion Bridge Co. Ltd., Montreal, Que.

3085 tons, spillway gates, Safe Harbor Water Power Corp., Safe Harbor, Pa., to Newport News Ship Building & Dry Dock Co., Newport News, Va.

1645 tons, 15-story apartment, Fifth avenue and Sixty-sixth street, New York, to George A. Just Co., Long Island City, N. Y.; Charles T. Wills Inc., general contractor; Rosario Candela and Delano & Aldrich, architects.

1300 tons, apartment, Abingdon Square section, New York, to Taylor-Fichter Steel Construction Co., New York; Bing & Bing project.

1300 tons, graduate school, Yale university, New Haven, Conn., to Levering & Garrigues Co., New York; Marc Eidlitz & Son, New York, general contractors.

1000 tons, three-story garage, Twelfth avenue, at Fifty-first street, New York, to Cosmic Iron Works, Bronx, N. Y.

700 tons, Creighton avenue viaduct, Union Pacific railroad, Omaha, Nebr., to Omaha Steel Works, Omaha.

700 tons, subway work in Chicago for Chicago & North Western railroad, 400 tons to Mississippi Valley Structural Steel Co., Decatur, Ill., and 300 tons to Worden-Allen Co., Chicago.

700 tons, plus 1800 tons of plates, 600 steel underframes for Pacific Fruit Express, jointly to Western Pipe & Steel Co., Los Angeles, and Pacific Car & Foundry Co., Seattle.

700 tons, apartment, 850 Amsterdam avenue, New York, to C. P. Winters Co., New York.

700 tons, girder spans, bridge at Mosby, Mo., Chicago, Milwaukee, St. Paul & Pacific railroad, to American Bridge Co.

577 tons, Shrine consistory, Collingswood, N. J., to Bethlehem Fabricators Inc., Bethlehem, Pa.

550 tons, store building, S. H. Kress Co., Spokane, to Ingalls Iron Works Co., Birmingham, Ala., and Verona, Pa., instead of to Minneapolis Steel & Machinery Co., Minneapolis, as reported in STEEL of Oct. 30.

550 tons, Van de Kamp bakery, Los Angeles, to McClintic-Marshall Co., Los Angeles.

500 tons, Coliseum, Sterling, Ill., to Davenport Foundry & Machine Co., Davenport, Iowa.

500 tons, normal school, Plattsburg, N. Y., to Williams Bridge Co., Syracuse, N. Y.

500 tons, apartment, Amsterdam avenue, New York, to Weatherly Steel Co., New York.

500 tons, Humber river bridge, Toronto, Ont., to Hamilton Bridge Works Ltd., Hamilton, Ont.

500 tons, power house, Humble Oil & Refining Co., Baytown, Tex., to unstated fabricator.

450 tons, post office, Albuquerque, N. Mex., to unstated interest.

413 tons, power house, Jersey City hospital, Jersey City, N. J., to Mullaney Iron Works, Jersey City.

400 tons, high school, Hammond, Ind., to McClintic-Marshall Co., Chicago.

400 tons, lodge building at Lubbock, Tex., to Ben Sibbitt Iron & Foundry Co., Dallas, Tex.

400 tons, Crosby Hall, University of Buffalo, to R. S. McManus Steel Construction Co. Inc., Buffalo.

400 tons, municipal light plant, Pasadena, Calif., to McClintic-Marshall Co., Los Angeles.

371 tons, dormitory, Department of Interior group, Washington, to Barber & Ross, Washington; Maiatio Construction Co., general contractor.

340 tons, anchorage for Tenth street bridge, Pittsburgh, to Fort Pitt Bridge Works Co., Pittsburgh.

325 tons, car ferry apron, Pere Mar-

Awards Compared

	Tons
Awards this week	35,037
Awards last week	29,042
Awards two weeks ago	30,128
Awards this week in 1929	21,972
Av. weekly awards, 1930	35,695
Av. weekly awards, 1929	42,213
Av. weekly awards, Oct.	37,575
Tot. awards to date, 1929	1,992,978
Tot. awards to date, 1930	1,713,387

quette railroad, to American Bridge Co.

325 tons, addition Charlotte Pipe & Foundry Co., Charlotte, N. C., to Ingalls Iron Works Co., Birmingham, Ala.

320 tons, Paramount theater, Steubenville, O., to Wheeling Structural Steel Co., Wheeling, W. Va.; Kaiser-Ducett Co., Joliet, Ill., general contractor.

300 tons, building, Standard Oil Co. of
ricator.
Louisiana, Baton Rouge, to local fab-

250 tons, pig casting shed, Birmingham, Ala., to Ingalls Iron Works Co., Birmingham.

249 tons, Forest Hills school, Syracuse, N. Y., to Syracuse Engineering Co., Syracuse.

240 tons, Eastwood school, Syracuse, N. Y., to Syracuse Engineering Co.; Shane Construction Co., general contractor; 30 tons reinforcing steel to Kalman Steel Co.

225 tons, state bridge, Salem, Mass., to Boston Bridge Works Inc., Boston.

202 tons, including 30 tons steel deck, city hall, Muskogee, Okla., to Muskogee Iron Works, Muskogee; Manhattan Construction Co., Muskogee, general contractor.

200 tons, building at Plymouth, Mich., for House of Correction, Detroit, to R. C. Mahon Co., Detroit; Martin-Krausmann Co., general contractor; Albert Kahn Inc., architect.

200 tons, refinery, building, Standard Oil Co., Whiting, Ind., to Vierling Steel Works, Chicago.

200 tons, 3-story addition to penitentiary, Caldwell, N. J., to National Iron Works, Jersey City, N. J.

200 tons, two bridges, Wabash railroad, to McClintic-Marshall Co., Pittsburgh.

200 tons, post office, Ogden, Utah, to unstated interest.

185 tons, plate girder spans, Shamokin division, Reading railroad, to Bethlehem Steel Co., Bethlehem, Pa.

130 tons, apartment, Fair Oaks avenue, San Francisco, to Golden Gate Iron Works, San Francisco.

130 tons, apartment, Forest Hills, N. Y., to J. Klein Iron Works Inc., Astoria, N. Y.; Cord Myer interests, builders.

125 tons building, Second National bank, Hamilton, O., to Wheeling Structural Steel Co., Wheeling, W. Va.

100 tons, miscellaneous work including barracks, cadet mess hall and recreation building, Randolph Field, Tex., to Decatur Iron & Steel Co., Decatur, Ala.; S. & W. Construction Co., Memphis, Tenn., general contractor, and additional barracks, Randolph Field, Tex.; Murch Bros. Construction Co., St. Louis, general contractor.

100 tons, warehouse addition, Crane Co., Los Angeles, to Consolidated Steel Corp., Los Angeles.

100 tons, St. Phillips hospital nurses' home, Richmond, Va., to Richmond Structural Steel Co., Richmond.

100 tons, building, National City bank, Greenpoint, N. Y., to Dreier Iron Works, Bronx, N. Y.

Contracts Pending

7800 tons, subway, route 108, section 10, Queens, N. Y.; bids close Dec. 23.

7500 tons, subway, route 107, section 9, Brooklyn, N. Y.; bids close Dec. 16.

7500 tons, Olympic club, San Francisco; Philadelphia; Golder Construction Co., Philadelphia, low.

4000 tons, building, First National Bank & Trust Co., Oklahoma City, Okla.; American Bridge Co., Chicago, low bidder.

3100 tons, Louisiana capitol building, Baton Rouge, La.

2700 tons, bridge over Wabash river at Mt. Carmel, Ill.; bids Dec. 9.

2500 tons, Withrow avenue school, Toronto, Ont., board of education, 155 College street, Toronto.

2000 tons, Cathedral library, Baltimore.

2000 tons, bridges for Tennessee highway commission.

2000 tons, Riverside steam power plant, Minneapolis.

1400 tons, Y.M.C.A. building, Toledo, O.; revised bids due Jan. 1, 1931.

1000 tons, Roosevelt school, Washington; National Construction Co., Washington, low.

1000 tons, apartment, West Twenty-third street, New York.

800 tons, inspection shed, board of transportation, New York.

700 tons, bank, Reading, Pa.

520 tons, prison, Auburn, N. Y.

500 tons, buildings, United States coast guard, New London, Conn.

500 tons, high school, Portchester, N. Y.

400 tons, Northeast high school, Baltimore.

300 tons, Big 4 railroad bridge, West Fortieth street, Cleveland; general contract to Industrial Construction Co., Cleveland.

300 tons, Roosevelt Memorial, New York.

200 tons, coast guard station, New London, Conn.

110 tons, telephone building, Framingham, Mass.

100 tons, school, Washington; bids Dec. 3.

100 tons, school, Washington; bids Dec. 5.

Concrete Bars

Lettings Active—8000-Ton Requirement Placed in Birmingham District — 2500-Ton Apartment Let in Washington — Inquiries Heavy, Topped by 3000-ton Mart

REINFORCING BAR PRICES, PAGE 69

New York—Concrete reinforcing bar prices are steadier at 2.35c, New York, for cut lengths in lots of 20 tons and over. Volume and inquiry are seasonally high, although much pending tonnage is for public work. Private inquiry is not large. Several projects are delayed due to reported slowness in closing general contracts. Bids are in on two subway jobs calling for more than 1000 tons. Bids have also been closed on the general contract for the third section, West Side elevated highway, but no announcement has been made as to the result.

At least one Pittsburgh mill notified local concrete bar distributors Tuesday afternoon that prices would be advanced around Dec. 1.

Chicago—Billet reinforcing bars now are quoted nominally at 1.70c to 1.80c, as fabricators virtually have discontinued unit differentials for quantities under 200 tons. Rail steel bars for building are 1.50c to 1.60c, while for road, bridge and culvert work they are 1.65c to 1.75c.

Boston—While small concrete jobs aggregate well each week, business shows little improvement. A 545-ton hospital at Springfield, Mass., is about to be let; Kalman Steel Co. is understood to be low.

Pittsburgh—Further decline is noted in reinforcing bar demand, most of the recession being seasonal. Awards and inquiry in this district usually involve lots of less than 100 tons at a time.

Cincinnati—Bids will be opened this week by the Kentucky Highway commission for 13 or more road jobs requiring 500 tons of concrete bars in the aggregate.

Birmingham, Ala.—Concrete bar shipments continue steady. Plant operations will be maintained.

Awards Compared

	Tons
Awards this week	**15,710**
Awards last week	**6,505**
Awards two weeks ago	**4,582**
Awards this week in 1929	**6,395**
Av. weekly awards, 1929	**5,849**
Av. weekly awards, 1930	**7,244**
Average weekly awards Oct.	**8,612**
Total awards to date, 1929	**289,544**
Total awards to date, 1930	**347,732**

Contracts Placed

8000 tons, requirements for Raymond Concrete Pile Co., New York, 500 tons monthly, to Concrete Steel Co., Birmingham, Ala., branch.

2500 tons, Kennedy-Warren apartment, Washington, to Rosslyn Steel & Cement Co., Rosslyn, Va.

1200 tons, highway route 4, section 3, Hackensack, N. J., to Fort Lee, N. J., to Buffalo Steel Co., Buffalo; George M. Brewster & Son, general contractors; bridges on route sublet.

800 tons, water project at Kenner, La., to Dudley Bar Sales Co., Birmingham, Ala., agency; T. Oliver & Son, New Orleans.

800 tons, barracks for United States marine corps, Quantico, Va., to Truscon Steel Co., Chicago, through Ralph

(*Concluded on Page 77*)

Strip

Current Prices Offered for First Quarter Contracts—Some Automotive Tonnage Helps Mills

STRIP PRICES, PAGE 69

Pittsburgh — Strip tonnage has been aided recently by better demand from some automotive interests but total orders so far this month are off moderately from the October rate. First quarter prices have been announced as unchanged from current quotations of 1.65c to 1.70c for narrow hot strip and 1.55c to 1.60c for wide material. Cold rolled strip usually is 2.35c, with 2.45c having disappeared on the small lots and although there are occasional reports of 2.25c, the 2.35c price has been reaffirmed for first quarter. Mill operations continue 30 per cent for hot mills and 20 to 25 per cent for cold mills.

Philadelphia — Hot-rolled strip now is 1.65c to 1.75c, Pittsburgh, for wide and 1.75c to 1.85c, for narrow, while widths over 24 inches are 1.75c, Pittsburgh, on heavy gages and 1.90c on light. Requirements of radio manufacturers are falling off.

Youngstown, O.—Makers of hot-rolled strip have opened books for first quarter delivery for definite tonnages and stated delivery dates at 1.55c to 1.65c, Pittsburgh, depending upon width. At the moment there appears no disposition to extend full first quarter coverage at these levels but with an evident leaning toward accepting the new Chicago base which involves an advance of $2 a ton over the above noted minimums. Cold-rolled holds here at 2.45c, Pittsburgh and Cleveland. A fair volume of business continues to trickle into mills, the larger portion being for hot-rolled strip.

Cleveland—Buying of strip steel is on a smaller scale than in September or October and makers believe they have at least six or eight dull weeks ahead. Automotive specifications show little improvement and miscellaneous consuming lines still order inconsequential tonnages. Cold strip is 2.25c to 2.35c, Cleveland. Some makers have a 2.35c quotation but will meet 2.25c when they have to. Fender stock has been reduced from 3.60c to 3.50c. Wide hot strip buyers have uncovered $2 a ton concessions, wide now being quoted 1.50c to 1.60c, Pittsburgh, and narrow 1.60c to 1.70c.

Chicago — Acme Steel Co. has named first quarter prices on hot-rolled strip, which are an extension of the fourth quarter schedule into next year. Wide sizes of hot-rolled strip are quoted at 1.70c, Chicago, while material under six inches is quoted at 1.80c. These prices coincide with recent levels. Hot-rolled strip mill operations are about 40 per cent. Fair automotive releases have resulted this month, the best since August. Cold-rolled strip quotations named for first quarter are on the basis of 2.35c, Pittsburgh-Cleveland. While cold-rolled mills have been getting more tonnage, nothing in the way of real backlogs has developed.

Warehouse Sales' Decline General in November

Warehouse Prices, Page 91

Philadelphia—Jobbers report volume demand since Nov. 1 the smallest for the entire year to date. Prices are unchanged.

New York—Jobbing demand remains quiet, with the total volume for the month likely to be less than October. Prices are unchanged, although slightly steadier.

Pittsburgh—Sales continue behind the October rate. Volume of orders is little changed but purchases are fewer. Nail prices are off 5 to 10 cents a keg at $2.15 to $2.20.

Cleveland — Demand from consumers of warehouse material continues light. Orders are fairly steady, but light in aggregate tonnage. Jobber interests see little hope of upturn during the remainder of the year. Further recent reductions in mill operations have placed mills in position to fill orders for an increasing number of normal jobber clientele. Prices continue unchanged and apparently firm.

Cincinnati — Warehouse volume, although considerable below last year, has resisted pre-holiday influences. Buying is widely diversified. Prices may be considered firm.

Chicago — Hot-rolled bar orders from warehouse stock are fairly active. November sales of all products are nearly equivalent to October. Slight reductions have been made in several hot-rolled products from Milwaukee warehouse, due to local conditions. A warehouse in this district is expanding with a new storage unit. Chicago district prices are unchanged.

St. Louis—Reports covering the first half of November indicate a moderate decrease in business of the iron and steel warehouses as contrasted with the similar period a month earlier. Standard structural shapes, beams and other building materials are slow.

Operations Off in Valley; Otherwise Unchanged

Cleveland—With 15 open hearths pouring, the district's 44 per cent rate is unchanged from last week. Otis Steel Co. with five on, prepares to add another within the week, and has added several smaller furnaces at its Lakeside works, which were down last week. Each of the individual producers continues unchanged from last week.

Philadelphia—Eastern ingot output is down to an approximate 45 per cent of capacity, evidencing a seasonal production decline. Plate mills run at 40 to 50 per cent.

Pittsburgh — Ingot production holds around 45 per cent. Finishing mill schedules, however, generally are lower. Sheet output is off at 40, with tin plate lower at 40 to 45. Strip continues 30 with pipe lower at 40 to 45.

Buffalo—Operations in this district hold at 46 per cent of open-hearth capacity, but it is reported December curtailments in some plants will be unusually early and will reduce this rate materially.

Youngstown, O.—Steel plant operations have declined to 46 per cent of capacity, a loss of six points from last week's level of 52 per cent. Unfavorable developments this week are a decline of ten points in Youngstown Sheet & Tube Co. activity, a decline of five points in operations of Republic Steel Corp., and suspension of operations at Empire Steel Corp.'s Falcon unit. Sharon Steel Hoop Co. maintains operations at 60 per cent, and Newton Steel Co. at 50 per cent. The Carnegie Steel Co.'s three large plants here also made no change today in their average operating rate of 50 per cent. Youngstown Sheet & Tube Co. operations this week are at 40 per cent capacity. Republic Steel Corp. activity is at 50 per cent.

Chicago—Due to slight gains in plate and bar mill operations, ingot output is up about two points to 45 to 47, compared with last week's 45 per cent. Steelworks blast furnace output is unchanged.

Birmingham, Ala.—Steel operations will be held to the same pace this week as for the past two weeks, at about 43 per cent capacity. There is lagging in wire and wire products. Nine open-hearth furnaces are active.

Concrete Awards

(*Concluded from Page 73*)

Pacific Coast Steel Co., San Francisco, low.

5500 tons, subway, route 108, section 11, Queens, N. Y.; bids Dec. 23.

5000 tons, Locust avenue subway, Sollitt & Sons Construction Co., Chicago, listed last week as going to unstated fabricator.

514 tons, 114 tons in piling and 400 tons in building, Jefferson county court house, Beaumont, Tex., to Contractors Steel Co., Beaumont; McDaniel Bros., Beaumont, general contractor.

400 tons, State building, Los Angeles, to Truscon Steel Co., Los Angeles.

350 tons, warehouse, Ninth street, Los Angeles, to Pacific Coast Steel Corp., Los Angeles.

275 tons, theatre and hotel building, Davenport, Iowa, to Joseph T. Ryerson & Son Inc., Chicago.

250 tons, bridge, Westchester county, N. Y., to Truscon Steel Co., Youngstown, O.

200 tons, warehouse, Terminal island, Los Angeles, to unstated interest.

161 tons, dormitory, Department of Interior group, Washington; to Hudson-Daugherty Co., Washington; Maiatio Construction Co., general contractor.

160 tons, medical school clinic, Boston, to Truscon Steel Co., Youngstown, O.

150 tons, theater, Albany, N. Y., to Joseph T. Ryerson & Son Inc., New York; M. Shapiro & Son, general contractor.

150 tons, theater, Schenectady, N. Y., to Joseph T. Ryerson & Son Inc., New York; M. Shapiro & Son, general contractors.

150 tons, addition to Jackson school, Detroit board of education, Marlborough avenue, Detroit, to Palmer-Bee Co., Detroit; B. C. Wetzel & Co., Detroit, architects.

100 tons, miscellaneous work including 54 tons of bars and 10 tons bar joist, city hall, Muskogee, Okla., to Muskogee Iron Works, Muskogee; Manhattan Construction Co., Muskogee, general contractor.

100 tons, warehouse, Fish Furniture Co., Lawrence and Christiana avenues, Chicago, to Joseph T. Ryerson & Son Inc., Chicago; noted as going to unstated fabricator in STEEL of Oct. 16.

100 tons, bridge for Marion county, Ala., to Dudley Bar Sales Co., Birmingham, Ala., agency; through H. N. Donahoo, Birmingham, general contractor.

100 tons, warehouse, Puget Sound navy yard, divided between Pacific Coast Steel Corp. and Northwest Steel Rolling Mills, Seattle.

100 tons, garage, 1407 North Gower street, Los Angeles, to unstated interest.

100 tons, jail, Ventura, Calif., to Concrete Engineering Co., Chicago.

100 tons, Van de Kamp bakery, Los Angeles, to unstated interest.

Contracts Pending

3000 tons, merchandise mart, St. Louis Mart Inc., St. Louis.

1800 tons, Locust avenue subway, Philadelphia; Golder Construction Co., Philadelphia, low.

1500 tons, subway, route 107, section 9, Brooklyn, N. Y.; bids close Dec. 16.

860 tons, Olympic club, San Francisco; bids opened.

500 tons, 13 or more road jobs, Kentucky highway commission; bids opened this week.

500 tons, addition to Soldier Field, Grant Park, Chicago.

545 tons, hospital, Springfield, Mass.; Kalman Steel Co. low bidder.

530 tons, subway, route 108, section 10, Queens, N. Y.; bids close Dec. 23.

450 tons, subway, route 108, section 11, Queens, N. Y.; bids Dec. 23.

300 tons, estimated, post office and federal building, Bloomington, Ill.

300 tons, Big 4 railroad bridge, West Fortieth street, Cleveland; general contract to Industrial Construction Co., Cleveland.

220 tons, Goldberg store addition, Milwaukee avenue, Chicago.

185 tons, tunnel, Pilgrim hospital, Brentwood, L. I.

110 tons, bridge, Harway avenue, Brooklyn, N. Y.

Tin Plate Contracting Slow; Operations Lower

Tin Plate Prices, Page 69

Pittsburgh—Tin plate is in a quiet but steady market. Specifications continue in about their former volume with operations slightly lower at 40 to 45 per cent. Mill schedules fluctuate from week to week. Contracting for the first half of 1931 still is slow, with some large consumers remaining to place contracts. The market continues $5 per base box, Pittsburgh.

Pipe

Utilities Ordering and Inquiring—Los Angeles Wants 3336 Tons—Steel Grades Dull

PIPE PRICES, PAGE 91

New York—Utilities show more interest in cast pipe. Close to 4000 tons are up for gas lines. Three other utilities will close on first quarter or first half requirements before Dec. 31. Federal Water Service bought 300 tons of 20-inch. Salem, Mass., and Manchester, N. H., are taking bids on 300 and 400 tons respectively. Prices hold firm on a basis of $36 to $37, eastern foundry. Operations are estimated between 60 and 65 per cent.

Boston—Gas pipe demand improved during the past day or two. Nearly 3000 tons are pending in three jobs. Manchester, N. H., awarded 700 tons. Boston's 2150-ton requirement is the largest inquiry.

Pittsburgh—The pipe market has grown more dull in some products. Oil country goods are experiencing poor demand and restricted building curtails standard pipe activity. Line pipe activity is confined mostly to preliminary details for 1931 projects. Mechanical tubing and locomotive and boiler tubes remain quiet. Mill operations are lower at 40 to 45 per cent.

Cleveland—Standard full weight merchant pipe orders from jobbers are scattered. Most have enough on hand to serve them as stocks at the year end. The plumbing and heating contract for Higbee Co. department store is reported let to Feldman Bros. Several carloads of pipe will be bought.

Chicago—About 400 tons of cast water and gas pipe work has been let in carload lots through contractors here. Chicago delivered prices are unchanged at $45.20 to $46.20 for 6 to 24-inch.

Birmingham, Ala.—Cast pressure pipe is firm at $37 to $38, foundry, on 6-inch and larger. Lettings aggregate poorly and orders are nearly completed owing to recent steady shipments.

Contracts Placed

700 tons, 6 to 20-inch cast pipe for Manchester, N. H., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

300 tons, 20-inch cast pipe for Manhathattan, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.; Bronx Water Co., general contractor.

300 tons, 20-inch cast pipe for Federal Water Service for Charleston, W. Va., delivery, to R. D. Wood & Co., Florence, N. J.

250 tons, 6 and 8-inch cast pipe for Hoquiam, Wash., to American Cast Iron Pipe Co., Seattle.

150 tons, 8, 10 and 12-inch cast pipe for new pulp mill, Weyerhaeuser Timber Co., Longview, Wash., to American Cast Iron Pipe Co., Seattle.

135 tons, 8 and 12-inch sand cast pipe, two improvement jobs in Seattle, to American Cast Iron Pipe Co., Seattle.

100 tons, 6 to 12-inch cast pipe for Camp Devens, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

Steel Pipe Orders Placed

390 tons, 24-inch welded steel pipe, East Bay municipal utility district, Oakland, Calif., to Steel Tank & Pipe Co., Berkeley, Calif.

Contracts Pending

5000 tons, estimated first half requirements, Federal Water Service Co., to close before end of the year.

3336 tons, 8 and 12-inch class 150 cast pipe for Los Angeles; bids Nov. 24.

3000 tons, estimated, gas pipe, for United Gas Improvement interests, Philadelphia.

2150 tons, 6 to 16-inch cast pipe and 30 tons of special castings for Boston; bids opened Dec. 4.

1000 tons, estimated, gas pipe for Consolidated Gas, Electric & Power Co.,

'Cross Mobile Bay

Via

TENNESSEE Structural Steel

Main section of the Cochrane Bridge across Mobile Bay
Virginia Bridge and Iron Company, Fabricator

Approaching the City of Mobile from the East and constituting an important link in the Old Spanish Trail between Jacksonville and New Orleans, the several separate structures comprising the Cochrane Bridge cast their imposing spans across Mobile Bay and the adjacent low lands. Permanence, strength and rugged beauty have been built into these bridges through the use of Tennessee Structural Steel.

Tennessee Coal, Iron & Railroad Company

General Offices: Brown-Marx Building, Birmingham, Ala.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES OF UNITED STATES STEEL CORPORATION:

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPB'LDG. & DRY DOCK CO.
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Bldg., San Francisco, Calif.
Export Distributors—United States Steel Products Company, 30 Church St., New York City

Baltimore.

926 tons, 6 and 8-inch class 150 cast pipe for San Francisco; bids Dec. 1.

500 tons, 6 and 8-inch cast pipe for Bridgewater, Mass.; bids opened Nov. 25.

400 tons, 8 to 16-inch cast iron pipe for Manchester, N. H.

400 tons, 4, 6 and 8-inch cast pipe for Steger, Ill.; bids Nov. 24.

375 tons, 6-inch cast pipe for Salem, Mass.; bids opened Nov. 28.

300 tons, 4 to 8-inch cast pipe for Delphi, Ind.; bids Nov. 25.

Unstated tonnage, first half needs, Allied Power & Light Co.

Unstated tonnage, first half needs, American Water Works interests.

Steel Pipe Inquiries Pending

350 tons, 20-inch welded steel pipe, Santa Cruz, Calif.; bids rejected.

Semifinished Consumers Defer First Quarter Orders

Semifinished Prices, Page 80

Pittsburgh—Activity is lacking in the market for semifinished steel with little interest displayed in either spot tonnages or future contracts. Requirements of nonintegrated mills usually are covered by small spot orders but such tonnage is smaller than a month ago. The market nominally is quoted $31 for rerolling billets, slabs and sheet bars and $36 for forging billets and wire rods.

Philadelphia—Billet demand is light and prices continue $31, Pittsburgh, for rerollers and $36 for forging quality. Wire rods are unchanged at $36.

Youngstown, O. — Independent steelmakers put four additional open hearths on this week bringing operations to around 43 per cent. Sheet and strip mills are taking necesary shipments of sheet bars and billets. Billets, sheet bars and slabs are bringing $31, Youngstown and Pittsburgh.

Cleveland—The leading merchant producer of sheet bars, billets and slabs here is operating six of its 14 open hearths. Shipments are being made on some orders at $31, base, Cleveland or Youngstown, O. It is understood, however, a northern Ohio consumer placed some sheet bars at $30, base, Cleveland. Current business is quiet and no definite bookings have been made for first quarter.

Chicago — Water shipments of sheet bars and other semifinished products are rushed before the close of lake navigation. In the absence of active selling semifinished prices are quoted nominally on the basis of $32, Chicago, for small billets, slabs and sheet bars. Forging billets have a $37, Chicago, base.

Wire

Nail Prices Show No Change from Low Level—Some Districts See Better Buying

WIRE PRICES, PAGE 69

New York—Nail prices are easy at $1.90 to $1.95, Pittsburgh, notwithstanding fair business. Some $2 business still is reported but the quantities involved are light. Plain bright wire is 2.30c, Pittsburgh.

A leading seller of nails has opened books for first quarter contracts at prevailing prices, $1.90, Pittsburgh, for nails, and 2.30c, Pittsburgh, for plain bright wire.

Worcester, Mass.—A slight advance in wire demand and diversification of inquiry are reported. Electrical sources still lead demand, although there is some encouragement from production of the new Chevrolet. Plain bright wire to dealers is firm at 2.40c, base, Worcester.

Philadelphia — Demand for wire and nails is somewhat larger, with nails at $1.90, Pittsburgh and wire usually 2.30c, Pittsburgh, though the latter is being shaded.

Pittsburgh — New business and shipments of wire products show little change with demand less active than a month ago. Business compares rather favorably with November of last year, which showed a substantial decline from activity of preceding months. Prices are unchanged with standard wire nails usually $1.90 to jobbers and other jobbing products at the usual differentials from this figure. Plain wire usually is 2.30c to the manufacturing trade with wire rods continuing $36.

Youngstown, O.—While demand for manufacturers' wire continues as in past weeks to furnish most tonnage, wire products quotations show some indications of firming. An advance of $1 to $2 a ton in wire nails from the present basis of $1.90 to $1.95 a keg, Cleveland and Pittsburgh, would not be surprising. Bright wire, gages 6 to 9, still is quoted at 2.30c, Pittsburgh-Cleveland.

Cleveland—Specifications for wire from manufacturers may be expected to be held at the current minimum for the rest of the year. Approaching annual inventories in mid-December will tend to hold stocks from being increased in the meantime. Spring-wire orders show no change. Jobbers' ordering slowly tapers. First-quarter hooks are open in some wire products. Plain wire is 2.20c to 2.30c, Cleveland. Bolt and nut manufacturers have been increasing commitments slowly. Nails continue $1.90 to $2 a keg, Cleveland.

Chicago—Western wire mills find November specifications a little ahead of October and the best since August. Jobber sales of merchant products are fair, while dealer buying remains quiet. The nail market remains unsettled with quotations as low as $1.95, Chicago or western mills.

Nuts, Bolts, Rivets Show Some Increase in Demand

Bolts, Nuts, Rivets Prices, Page 69

Pittsburgh—Demand for bolts, nuts and rivets has shown a slight improvement recently, following a number of weeks of declining specifications. Orders are well distributed but individual tonnages remain light. Prices are steady and unchanged at 73 off for bolts and nuts and 2.75c, Pittsburgh, for rivets. Operations continue around 40 per cent.

Philadelphia—Bolt, nut and rivet manufacturers are sending out first quarter contracts at present prices.

Cleveland—Manufacturers of bolts and nuts show a slow but continued slight improvement in material specifications. However, orders for bolts and nuts are relatively quiet and individually small. Prices, at 73 off for bolts and nuts and 2.75c, Cleveland, on rivets, are well observed. Local rivet plant works four days weekly on curtailed operations. Bolt and nut operations show slight betterment.

Chicago—Producer operations remain at about 40 per cent. Specifications in bolts and nuts are falling behind October. Structural rivets remain unchanged at 2.85c, Chicago, in carload lots. First quarter contracting at present prices is expected to start next week.

Halts Rail Rate Change

Washington—Interstate commerce commission has suspended until June 20, 1931, operation of certain railroad schedules proposing to revise rates on iron and steel articles from points in Central Freight association territory to destinations in Michigan, Minnesota, and Wisconsin, via rail and lake and rail, lake, and rail, which would result in numerous increases and reductions.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	18.26 to 18.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail, Newark	18.78 to 19.28
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.01 to 17.51
Alabama, del. St. Louis	16.42
Alabama, del. Cincinnati	15.19 to 16.19
Alabama, del. Cleveland	17.51
Ala., Phila., dock del.	16.75 to 17.25
Ala., Balt., dock del.	16.50 to 17.00
Alabama, New York dock	16.50
Ala., Boston dock del.	17.25
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	15.19 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	19.28 to 19.78
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	18.76 to 19.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.26 to 19.76

MALLEABLE

Chicago, furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.50 to 18.00
Buffalo fur., local del.	17.00
Montreal, delivered	22.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14 $31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56 63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	27 to 28 cents
Indian, 48-50% (nom.)	27 to 28 cents
Brazilian, 46-48% (nom.)	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.60c to 1.70c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$17.25
Washed gravel, import duty paid east, tide, gross ton	19.50

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FOR twenty-two years Armco INGOT IRON has been known and accepted as the "weldable iron." Its uniform purity endows it with those qualities most needed to weld sheets and plates soundly, efficiently and economically.

Durability and workability go hand in hand with weldability, for the same purity and homogeneity that make Armco INGOT IRON exceptionally ideal for welding, also make it corrosion resisting and ductile.

If welding, forming, drawing, or rust-resistance is your important requirement, we shall be glad to explain how Armco INGOT IRON can save you money and enable you to produce better products. Write to the nearest office.

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Back of this familiar symbol is nearly thirty years' experience in the manufacture of special analysis iron and steel sheets and plates. When you seek a rust-resisting, low-cost metal be sure to see this triangle and the words, "Armco INGOT IRON." It is your assurance of dependable service.

"BE SURE IT'S MADE OF ARMCO INGOT IRON"

Pig Iron

Market Firmer, with Larger Sales in Some Districts—Chicago Volume Best of Year

PIG IRON PRICES, PAGE 80

Pittsburgh—The market for pig iron is quiet and unimproved over the slow activity of the past several weeks. Shipments have declined, with holdups encountered in some directions, although the movement has changed little since a month ago. Orders are for small lots and inquiry is limited to that of the Westinghouse Electric & Mfg. Co., for Trafford City, Pa., Attica, N. Y., and Cleveland. Prices nominally are unchanged but lack strength. Blowing in of the Neville island stack of the Davison Coke & Iron Co. last week places two of seven merchant stacks in this district in blast. Jones & Laughlin Steel Corp. has shut down two of its furnaces.

Boston—Sales increased sharply to 4500 tons in the past week. About 3000 tons are pending. The Mystic Iron Works, Everett, Mass., sold more than 3100 tons. Prices have shown more firmness on these orders.

New York—Another fairly active week is noted in pig iron, sales aggregating 11,000 tons. New inquiry totals 5000 to 6000 tons. Slightly stronger prices on Buffalo iron are offset by easier quotations on eastern Pennsylvania iron at $17 to $17.50, furnace. Buffalo iron is $15.50 to $16, furnace, and southern iron, $16.50, delivered New York docks.

Philadelphia—Pig iron sales are limited to small lots, but considerable steelmaking iron is under negotiation. Foundry iron now is $17.50 to $18, base, eastern Pennsylvania furnace, subject to occasional equalizing to meet competition from Birmingham, Ala., and other districts.

Buffalo—Sellers here report increasing firmness of prices here and in the East. One more blast furnace is likely to be blown out early in December. Consumers' stocks are said to be the lowest in many years, and furnace stocks have been reduced in the past 30 days. Shipments by barge have been discontinued for the season.

Youngstown, O.—Pig iron sales are scarcely sufficient for price measurements. Some iron is moving from furnaces to foundries in small lots, with keen outside competition defining shipping limits rather sharply. No. 2 foundry brings $17, valley, and malleable $17.50.

Cleveland—Prices of pig iron have not wavered for several weeks and the sharp competition which formerly featured the market seems to have disappeared. Sales have shown a tendency to increase as users cover for first quarter. Makers believe the bottom has been reached and manifest a firmer attitude. They hope to stabilize prices before the new year. Large tonnages to test the market are lacking, but sales by furnace interests with headquarters in Cleveland mounted to 16,000 tons from 13,000 tons in the week preceding. Fully half of the tonnage is for first quarter. Westinghouse Electric & Mfg. Co. is obtaining prices, never stating amounts, for plants in Cleveland, Trafford City, Pa., and Attica, N. Y. A southern Ohio buyer wants 1000 tons, for first quarter. The minimum for shipment from lake furnaces to competitive points in Ohio, and northern Indiana is $16, while the price for delivery in Cleveland continues $17.50, base.

Chicago—Sales of pig iron in the past week are the best of any similar period this year, due mainly to three or four orders of 5000 tons or more. Several lots of 1000 tons also were closed for first quarter, including some automotive business. Little open inquiry is appearing. A sale of about 400 tons of southern iron is noted in this market at $11, base, Alabama furnace, making the range here on southern iron $11 to $11.50.

Cincinnati—An Indiana melter recently inquiring for 1200 tons of northern iron closed for twice this amount, 1200 tons being placed with a furnace representative here and a similar amount with a lake furnace. Southern furnaces are trying to hold firmly to $11.50, base, Birmingham. One Ohio consumer is asking for quotations on northern iron for shipment in the third quarter of 1931.

St. Louis—Prices are steadier, with total sales in this district 2200 tons for the week, a slight gain over the week preceding. Manufacturers of heating equipment anticipate a substantial improvement in orders soon.

Birmingham, Ala.—Southern makers have not opened books for first quarter and current prices are unchanged at $14, base, for local delivery. New orders are limited to small lots. Shipments are slightly heavier than production.

Toronto, Ont.—Merchant pig iron sales have improved in volume but continue restricted to small lots. Prices are steady.

Ferroalloy 1931 Prices Expected Soon; Sales Light

Ferroalloy Prices, Page 80

New York—While new contract prices are expected to be announced soon, the market on ferromanganese is steady at $99, duty paid, for carloads to 500 tons annually. Specifications continue light. Domestic spiegeleisen, 19 to 21 per cent, is $33, furnace, subject to differentials on quantities. Shipments of special ferroalloys show little change, and appear to be nearer normal than those alloys that depend on large tonnage of carbon steel. The alloys in this position are chrome, silicon, and a few others, but tungsten continues extremely quiet. A little wolframite ore sold recently at $12.50 a short ton, duty paid, and this remains nominally the market.

Pittsburgh—Shipments of ferromanganese and spiegeleisen are near the lowest level of the year. The spot market continues quiet, with prices remaining $103.79, Pittsburgh, and $33, furnace, for small lots of ferromanganese and spiegeleisen, respectively, pending announcement of the market for 1931. Other ferroalloys remain quiet.

Iron Ore Shipping Ends; Total 47,232,982 Tons

Iron Ore Prices, Page 80

Cleveland—Lake shipments of iron ore have been completed for the season and the total is 46.582,982 tons. All-rail shipments for the year are estimated at 650,000 tons. The combined movement is approximately 47,232,982 tons, a reduction of 18,930,655 tons, or 28.6 per cent, from 1929. This is the smallest total since 1924, with 43,896,318 tons. The November lake shipment was 1,987,688 tons, 49.5 per cent less than last year. It is reasonably certain that 1931 will see a considerable increase in tonnage. The Lake Superior Iron Ore association reports the following lake shipments for the season:

	1929	1930
Escanaba:		
C. & N. W.	4,445,775	2,923,131
C. M. & St. P.	1,902,793	1,173,682
Marquette:		
D. S. S. & A.	875,843	550,684
L. S. & I.	3,572,545*	2,410,986
Ashland:		
C. & N. W.	5,358,139	3,660,562
Soo Line	2,261,921	1,400,812
Superior:		
Great Nor.	17,355,736	12,450,361
Soo Line	1,373,871	1,013,623
Nor. Pac.	893,532	689,569
Duluth:		
D. M. & N.	20,562,705	14,001,327
Two Harbors:		
D. & I. R.	6,601,735	6,308,245
Total	65,204,600	46,582,982

Scrap

Unchanged Conditions Mark Situation as Consumers Buy Little and Dealers Hold Off

Chicago—Iron and steel scrap apparently has reached at least a temporary standstill in the declines that have brought most grades to the lows of 1921 and under. Yard production has been seriously curtailed by the low market, giving strength to the view that the bottom as measured by production costs has been reached. While cast borings have dropped to $4, the lowest in several decades, some competition in buying now is shown as an important yard interest is making purchases to bring down his average with higher priced borings now on order. A large foundry interest just sold a round tonnage of borings at $4.60, Chicago switching district. Only one large scrap melter is active and its shipments are restricted. Prices of most grades are

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	9.50 to 11.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	11.25 to 12.00
Buffalo, No. 2	9.75 to 10.00
Chicago	10.00 to 10.50
Cinci., deal.	10.00 to 10.50
Cleve., No. 1	10.50 to 11.00
Cleve., No. 2	9.75 to 10.25
Det. No. 1 deal.	9.75 to 10.25
Det., No. 2 deal.	7.00 to 7.50
E. Pa. del. mill	11.50 to 12.50
N. Y. del. R. R.	7.50
N Y. deal. No. 2	6.25 to 6.50
N. Y., deal. yd.	6.00
Pitts., No. 1	12.50 to 13.00
St. L. No. 1 sel.	10.50 to 11.00
Federal, Ill.	9.50 to 10.00
Granite C., Ill.	9.00 to 9.50
Valleys, No. 1	12.50 to 13.00

COMPRESSED SHEETS

Buffalo, dealers	9.75 to 10.00
Chicago	8.75 to 9.25
Cleveland	9.00 to 9.50
Detroit, dealers	9.00 to 9.50
E. Pa. new mat.	10.50 to 11.50
Pittsburgh	12.50 to 13.00
Valleys	12.00 to 12.50

BUNDLED SHEETS

Buffalo	8.00 to 8.50
Cinci., deal	9.25 to 9.75
Cleveland	7.00 to 7.50
Eastern Pa.	9.00
Pittsburgh	10.00 to 10.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	5.50 to 6.00
Cincinnati	5.50 to 6.00
Detroit, dealers	6.50 to 7.00
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	5.50 to 7.00
Buffalo	14.00 to 14.50
Chicago (3 ft.)	12.00 to 12.50
Chicago (2 ft.)	12.50 to 13.00
Cinci., deal.	15.50 to 16.00
Detroit, deal.	12.50 to 13.00
Pitts. (open-hearth, 3 ft. and less)	15.00 to 15.50
St. Louis	13.50 to 14.00

STOVE PLATE

Birmingham	8.50 to 9.00
Boston, con.	8.00 to 8.50
Buffalo	9.25 to 9.50
Chicago, net	6.50 to 7.00
Cinci., deal. net	5.75 to 6.25
Det., net, deal.	6.25 to 6.75
Eastern Pa.	9.00
N. Y., deal. mill	4.75 to 5.25
St. Louis	8.00 to 8.50

COUPLERS, SPRINGS

Buffalo	13.50 to 14.00
Chicago	12.00 to 12.50
Eastern Pa.	16.00 to 17.00
Pittsburgh	15.50 to 16.00
St. Louis	11.00 to 11.50

ANGLE BARS—STEEL

Chicago	11.75 to 12.25
St. Louis	9.50 to 10.00

LOW PHOSPHORUS

Buff., billets and bloom crops	15.00 to 15.50
Cleveland bil. and bloom crops	16.50 to 17.00
Eastern Pa.	17.50 to 18.00
Pittsburgh billet, bloom crops	17.50 to 18.00
Pitts. sheet bar crops	16.00 to 16.50

FROGS, SWITCHES

Chicago	10.00 to 10.50
St. Louis	10.50 to 11.00

SHOVELING STEEL

Chicago	10.00 to 10.50
Cleveland	6.75 to 7.25
St. Louis	9.50 to 10.00

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	8.50 to 9.00
Buffalo, No. 2	11.50 to 12.00
Chicago, No. 1	10.00 to 10.50
Chicago, No. 2	10.00 to 10.50
Cinci., No. 2	10.00 to 10.50
Eastern Pa.	13.50
N. Y., No. 1 deal.	10.00 to 10.50
Pitts., No. 2	12.50 to 13.00
St. Louis, No. 1	7.75 to 8.25
St. Louis, No. 2	9.50 to 10.00

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	9.75 to 10.00
Chicago, No. 1	8.00 to 8.50
Cinn., No. 1 dl.	8.50 to 9.00
Cinn., No. 2	5.00 to 5.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	8.50 to 9.00
St. L. No. 1	7.00 to 7.50
Val. new No. 1	12.00 to 12.50

MACHINE TURNINGS

Birmingham	7.50 to 8.00
Boston, dealers	2.50 to 3.00
Buffalo	7.00 to 8.25
Chicago	4.75 to 5.25
Cinn., deal.	5.00 to 5.50
Cleveland	4.75 to 5.25
Detroit	3.75 to 4.25
Eastern Pa.	6.50 to 7.50
N. Y., deal.	4.00
Pittsburgh	6.00 to 6.50
St. Louis	4.00 to 4.50
Valleys	6.00 to 6.50

BORINGS AND TURNINGS
For Blast Furnace Use

Boston	2.50 to 3.00
Buffalo	7.75 to 8.50
Cinn., deal.	5.00 to 5.50
Cleveland	6.75 to 7.25
Detroit, deal	4.50 to 5.00
Eastern Pa.	7.00 to 8.00
N. Y., deal.	4.00
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.50 to 8.00
Boston., chem.	9.00 to 9.50
Boston, deal.	2.50 to 3.00
Buffalo	7.75 to 8.50
Chicago	3.50 to 4.00
Cinn. deal.	5.00 to 5.50
Cleveland	6.75 to 7.25
Detroit, deal	4.50 to 5.00
Eastern Pa.	8.50
E. Pa., chem.	14.00 to 14.50
N. Y., deal.	4.00
Pittsburgh	7.50 to 8.00
St. Louis	6.00 to 6.50

PIPE AND FLUES

Cinn., deal	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	7.50 to 8.00
Chicago net	6.50 to 7.00
Cincinnati	7.00 to 7.50
Eastern Pa.	9.50 to 10.00
N. Y., deal.	6.00
St. Louis	7.50 to 8.00

FORGE FLASHINGS

Boston, deal.	6.00 to 6.25
Buffalo	10.00 to 10.50
Cleve. ov. 10 in.	9.00 to 9.50
Detroit	8.75 to 9.25

FORGE SCRAP

Boston, del.	5.50 to 6.00
Chicago	13.50 to 14.00
Eastern Pa.	11.00

ARCH BARS, TRANSOMS

Chicago, net	11.50 to 12.00
St. Louis	11.50 to 12.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	10.50 to 11.00
Chi., steelworks	6.50 to 7.00
Cleveland	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
Pittsburgh	11.00 to 11.50
St. Louis	7.50 to 8.00

STEEL CAR AXLES

Birmingham	14.00 to 15.50
Boston, ship. pt.	16.00 to 16.50
Buffalo	15.50 to 16.00
Chicago	15.10 to 15.70
Eastern Pa.	20.50
St. Louis	14.00 to 14.50

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	12.90 to 13.45
N. Y., deal.	13.00 to 14.00
St. Louis	12.00 to 12.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.00 to 13.50
Buffalo, steel	13.50 to 14.00
Chicago, iron	11.50 to 12.00
Chi., roll steel	13.50 to 14.00
Cincinnati, iron	11.00 to 11.50
Pitts., iron	13.50 to 14.00
Pitts., steel	15.50 to 16.00
St. Louis iron	10.50 to 11.00
St. Louis, steel	13.00 to 13.50
E. Pa. steel	16.00 to 16.50
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup.	10.00 to 10.50
Buffalo (mac.)	11.00 to 11.50
Boston, textile	11.00 to 11.50
Chicago, mach.	10.65 to 11.20
Chi., railroad	10.10 to 10.65
Chicago, agri.	9.50 to 10.10
Cinn., mach. cup., gross	14.50 to 15.50
Cleve. cupola	12.50 to 13.00
Det., net deal.	8.50 to 9.00
E. Pa. cupola	13.50
N. Y. cup. deal.	8.00 to 8.50
N. Y., del. local foundries	14.00
Pitts., cupola	12.50 to 13.00
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	9.75 to 10.25
St. L. No. 1	9.00 to 9.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	7.25 to 7.75
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	6.50 to 7.00
Eastern Pa.	11.00
N. Y. No. 1 dl.	7.00 to 8.00
N. Y. break. dl.	7.00 to 7.50
Pittsburgh	9.00 to 9.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	13.00 to 13.50
Chicago, agri.	11.00 to 11.50
Chicago, R. R.	12.00 to 12.50
Cinn., R. R. dl.	12.50 to 13.00
Cinn., agri., dl.	12.50 to 13.00
Cleve., rail	12.50 to 13.00
Det. auto deal.	12.00 to 12.50
St. Louis, rail	10.00 to 10.50

RAILS FOR ROLLING
5 feet and over

Birming., cup.	12.00 to 12.50
Boston	10.00 to 10.25
Buffalo	10.00 to 10.50
Chicago	13.00 to 13.50
Eastern Pa.	20.50
New York	9.50 to 10.00
St Louis	11.25 to 11.75

LOCOMOTIVE TIRES

Chicago, cut	13.00 to 13.50
St. L. No. 1	11.00 to 11.50

LOW PHOS. PUNCHINGS

Chicago	12.00 to 12.50
Pittsburgh	15.00 to 15.50
Eastern Pa.	16.00 to 17.00
Buffalo	14.00 to 14.50

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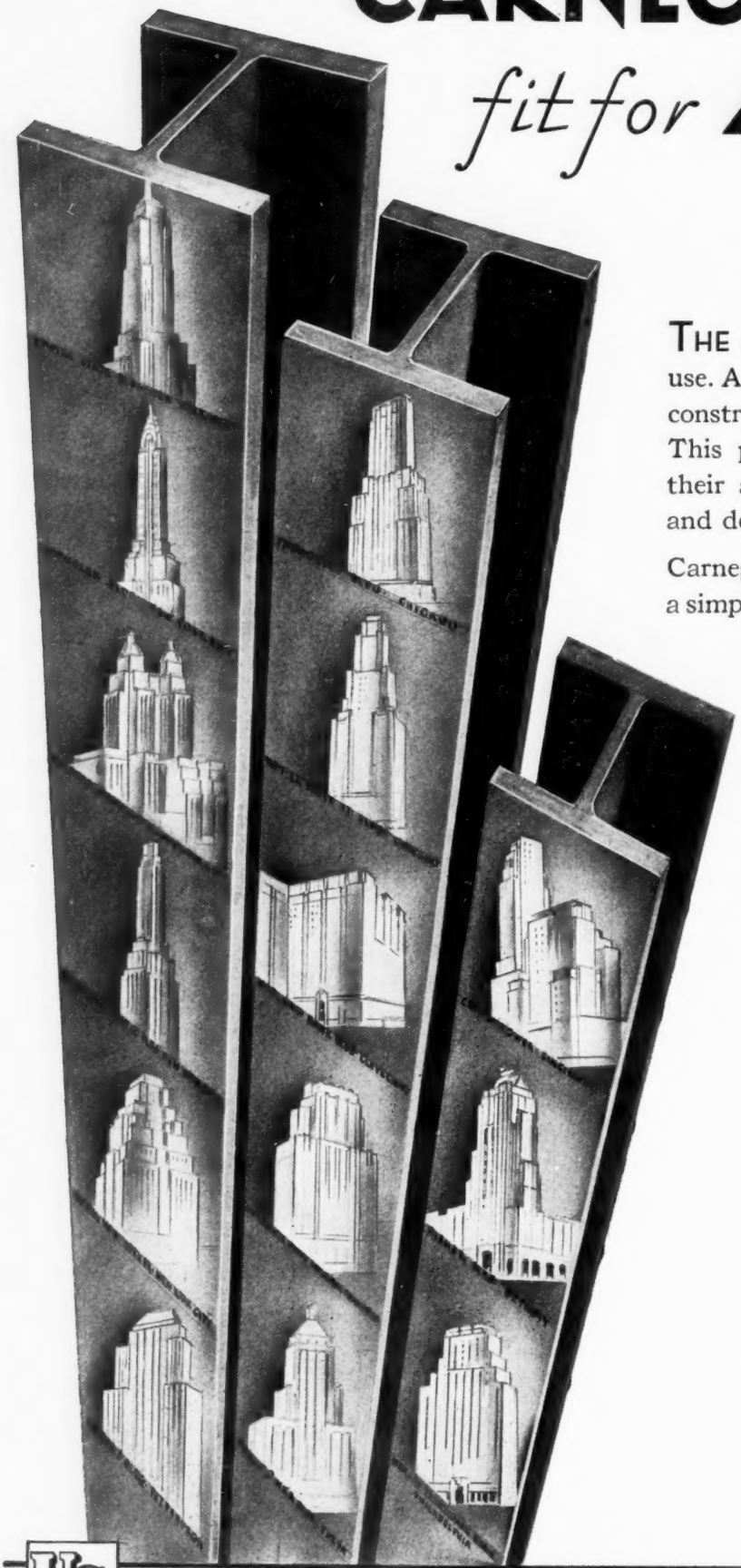

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Carnegie Beams bring to steel construction a simplicity of detail, a facility of fabrication and erection, and a flexibility of design never before possible. Wide parallel flanges, obtainable in Carnegie Beams only, simplify very markedly the great variety of connections necessary in fabrication. Constant-depth columns afford opportunities for duplication, both in design and erection. Due to the wide variety of sections and weights you will always find a Carnegie Beam which closely approximates the theoretical strength required.

Carnegie Beams merit the investigation of any one interested in efficient and economical construction. The advantages of these sections apply to any type of construction involving the use of structural steel, regardless of size or type of architecture. Carnegie engineers are always at your service.

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US STEEL

CARNEGIE STEEL COMPANY »» PITTSBURGH

Subsidiary of United States Steel Corporation

largely nominal, owing to unsettled dealers' buying prices, and concessions still offered in selling drives by dealer interests. Few orders are booked. Santa Fe, Rock Island and Chicago, Burlington & Quincy have released 10,000 to 12,000 tons of various grades in this market.

Boston—The market for iron and steel scrap remains dull. Sellers are not disposed to push sales, feeling prices are so low they can afford to wait. A few items show a small decline in the past week.

New York—Scrap prices continue easy, with a reduction in stove plate for mill consumption. The market now is $4.75 to $5.25, New York, compared with $5.25 previously, and follows the purchase of a fair tonnage by a Harrisburg, Pa., consumer at $9, delivered. Demand generally is slack.

Philadelphia—Buying of steel and iron scrap is in scattered tonnages, making a fair total. Some grades have sagged further.

No. 1 heavy melting has been offered by a dealer at $11, delivered Eastern Pennsylvania, and declined. The market still is represented by $11.50. Blast furnace borings and turnings now are $6 to $7. Bethlehem Steel Co. has bought 1500 tons of submarine scrap at the Philadelphia navy yard in shipping sizes, equivalent to unprepared heavy melting steel at $5.43, navy yard, equivalent to $7.07 per gross ton delivered, Bethlehem.

Buffalo—There is a trend toward narrowing price limits in scrap, dealers report, with some quotations for shipment on contract fractionally higher than a week ago. Tonnage buying is lacking, however, and some consumers are holding up shipments. Dealers' stocks are low and most material is moving directly to consumers.

Pittsburgh—Activity has been quickened in the steel and iron scrap market by the purchase of 10,000 to 15,000 tons of heavy melting steel by a large consumer, representing the first substantial purchase in six weeks. The price was $13, bringing the market for this grade down 25 cents since a week ago. Demand for other grades continues dull with most prices nominally unchanged.

Detroit—Further declines on several grades brings the market to what dealers believe will prove the bottom of the decline. Strength in some other markets is expected to be reflected here.

Cleveland—Despite substantial gain in steelmaking operations, local scrap consumers continue out of the market. Possibility is slight that mills here will enter the market for some time. Stock piles are heavy. One mill is receiving sufficient material from its railroad connection to supply present operations. Another has received considerable tonnage by boat from Detroit with the approaching close of the lake shipping season. Dealers' yards are also piled high with material. Movement to the valley has been reduced to a minimum with lower operations there. Quotations continue near recent low levels.

Cincinnati—Further weakness is shown in borings and turnings, which are quotable 50 cents lower, the lowest in the present recession. Locomotive tires are also down $1, at $11.50 to $12. Consumers are taking little scrap, on old contracts only, evidently reluctant to increase stocks.

St. Louis—Iron and steel scrap prices continue to record new low levels. Purchasing remains apathetic, and interest in anything except light tonnages for prompt delivery is low. An important element is the liberal available supply of a number of grades. Offerings from all sources, but more particularly railroads, have been more than can be digested, and for the first time in months distress scrap is appearing.

Birmingham, Ala.—Prices of steel and iron scrap are unchanged but weak and demand is lacking. Heavy melting steel and stove plate are moving to a limited extent. Supplies are ample.

Toronto, Ont.—Dull trading continues in the iron and steel scrap market. Mills show little interest and confine purchases to heavy melting steel. Some improvement has appeared in iron scrap sales, but all orders were for immediate shipment. Dealers are out of the market and yards are well stocked. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Movement Continues Slow—Market for Heating Coke Is Irregular—Sales Are Light

COKE PRICES, PAGE 80

Pittsburgh—The market for beehive coke is dull. Demand for furnace fuel for blast furnaces and other industrial purposes is lacking. The usual price continues $2.55. The movement of heating coke varies according to the weather, buying being confined to early needs. The movement of foundry coke is steady but light, at unchanged prices.

Beehive coke production in the Connellsville district during the week ending Nov. 15 was 16,600 tons against 15,860 tons the preceding week, and 49,250 tons the corresponding week of last year, according to the *Connellsville Courier*.

Boston—Coke sales continue light. The distributing plant for the New England Coke & Fuel Co., at Weymouth, Mass., was opened last week.

New York—Beehive furnace coke coninues $2.50 to $2.65, Connellsville, Pa., and standard beehive foundry coke, $3.50 to $3.75. Premium foundry coke is $4.70 to $4.85, Latrobe, Pa. Demand generally is slow. By-product coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Users of by-product foundry coke continue to order for immediate needs only. Prices are unchanged at $9, delivered, Cincinnati.

St. Louis—Demand for foundry and industrial coke shows a moderate decline from that of recent weeks, mild weather being one cause. Yards are well stocked.

Birmingham, Ala.—Independent producers here are shipping small lots of coke to Cuba, Mexico, and the Pacific coast, although business does not warrant an increase in production. Prices are unchanged.

Building and construction operations in October fell off to $153,055,932 in value from $169,375,999 in September, a loss of 10 per cent, according to S. W. Straus & Co., New York.

Pacific Coast

San Francisco Club Tonnage Bid Low by New Fabricating Interest—Fair Total of Work in Prospect—Most Business Is in Small Lots—Pipe Demand Is Light as Season Wanes

San Francisco—(*By Air Mail*)—Interest this week was centered on the opening of bids on the new Olympic club, San Francisco, requiring 7500 tons of structural steel shapes. The low bidder, at $75.55 a ton erected, was the Pacific Coast Steel Corp. This marks the first entry of this company into the fabrication business, its former activity being entirely confined to sale of plain shapes to other fabricators.

Bars, Plates and Shapes

Awards of concrete bars aggregated 2479 tons, the largest total in over six weeks. Awards included 400 tons for the State building, Los Angeles, placed with the Truscon Steel Co., and 350 tons for a warehouse in the same city, booked by the Pacific Coast Steel Corp. Bids have been opened on 860 tons for the Olympic club, San Francisco. Quotations on out-of-stock material in both the Los Angeles and San Francisco districts remain unchanged at 2.50c, base, on carload lots. Prices of carbon bars are weak and range from 2.10c to 2.20c, c.i.f.

The only plate award was 390 tons for a 24-inch welded steel pipe line for the East Bay municipal utility district, Oakland, placed with the Steel Tank & Pipe Co. Santa Cruz, Calif., rejected bids on 350 tons for a 20-inch welded steel pipe line. Bids will be opened Dec. 12 for 243 tons for two tanks at Boulder City, Nev., for the United States bureau of public roads. Quotations are not firm and 2.05c to 2.15c, c.i.f. is the usual range.

Structural shape awards were the heaviest in over a month and aggregated 2616 tons. Awards included 400 tons for a light plant in Pasadena and 550 tons for a bakery in Los Angeles, both placed with McClintic-Marshall Co. The Golden Gate Iron Works took 130 tons for an apartment and 216 tons for a theater in San Francisco. A warehouse addition for Crane Co., 100 tons, was booked by the Consolidated Steel Corp. Over 22,000 tons are now pending. Prices on plain material range from 2.15c to 2.25c, c.i.f.

Other Finished Material

Cast iron pipe awards were in lots of less than 100 tons. New inquiries include 3336 tons for Los Angeles, bids on which will be opened Nov. 24. San Francisco will open bids Dec. 1 for 926 tons of 6 and 8-inch Class 150 pipe.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Seattle Season Closing

Seattle—Important awards were lacking in the Pacific Northwest iron and steel markets this week but considerable tonnage is pending. The most important project is the Seattle assembly plant of the Ford Motor Co., requiring 3300 tons of structurals. Local fabricators have submitted tenders and an announcement is awaited.

Bars, Plates and Shapes

Local steel mills report unchanged operations although recent awards have been practically all small tonnages. Merchant bars are slow, price unchanged at 2.25c, reinforcing 2.30c. No important jobs involving reinforcing bars have developed. The navy department has awarded somewhat more than 100 tons of concrete bars for the Puget Sound navy yard, the contract being divided between the Pacific Coast Steel Corp. and Northwest Steel Rolling Mills, Seattle. The latter plant will also furnish 42 tons for the government fisheries building, Seattle.

All important projects involving plates in this district have been awarded and nothing of importance is pending. Mill prices are unchanged at 2.15c up. United States Steel Products Co. will furnish 600 tons of plates for a Tacoma pipe job awarded to the Birchfield Boiler Co.

Contract for constructing 600 steel underframes for the Pacific Fruit Express has been awarded jointly to the Western Pipe & Steel Co., San Francisco, and the Pacific Car & Foundry Co., Seattle. The work will be done in the former company's plant at Los Angeles. The job receives 2500 tons of steel, two-thirds plates and one-third shapes.

Aside from the Ford plant, three jobs covering 700 tons of shapes are up for figures before Dec. 1. No awards of size were reported this week. Mill prices are unchanged at 2.25c.

Warehouse Buying Light

The jobbing business is quiet, sales being confined to urgent needs. Buying is all out of stock and no forward business is noted. Wholesalers anticipate no improvement until after the holidays. Prices are unchanged. Some foreign steel is ariving but not in sufficient quantities to upset the local market.

Pipe Awards Are Moderate

Cast iron awards this week exceeded 550 tons. American Cast Iron Pipe Co., through R. C. Polk, Seattle, booked 250 tons for Hoquiam, Wash., 150 tons for the Weyerhaeuser pulp mill, Longview, Wash., and 135 tons for two local improvement jobs at Seattle. University Foundry Co., Birmingham, Ala., took about 30 tons of 14-inch pipe for the Hoquiam project. Seattle has approved a pipe extension on Beacon hill, about 550 tons. Date for bids is not yet announced. About 130 tons are involved in an improvement at Renton, Wash., bids for which have been received.

Old Materials Are Heavy

Local steel mills are quoting $9, gross ton, for scrap, no differential being paid for cast iron. Receipts continue heavy and stocks are increasing. Cast iron scrap is in poor demand and prices weak. Pacific Coast Steel Co. has bought about 400 tons of used bands and shoes sold by Seattle at a price which is said to work out at $3.92, gross ton.

Studies Merger Testimony

Youngstown, O.—Common Pleas Judge David G. Jenkins, who heard the Bethlehem-Sheet & Tube merger proceedings, has returned from vacation and is beginning examination of the voluminous testimony. A decision is expected about Christmas time.

How Protect Property?

"International Protection of Industrial Property" is the theme of the Linthicum 1931 prize essay contest, for which the Northwestern university law school, Chicago, will award a total of $1500 and a medal.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

	Steel		Iron		
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, N. Y.	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland. ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York	3.55c-3.65c
Phila.*†	3.60c
Pitts.**	3.40c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo	4.40c-4.60c
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.23c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL
Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c)	4.85c
New York	5.05c

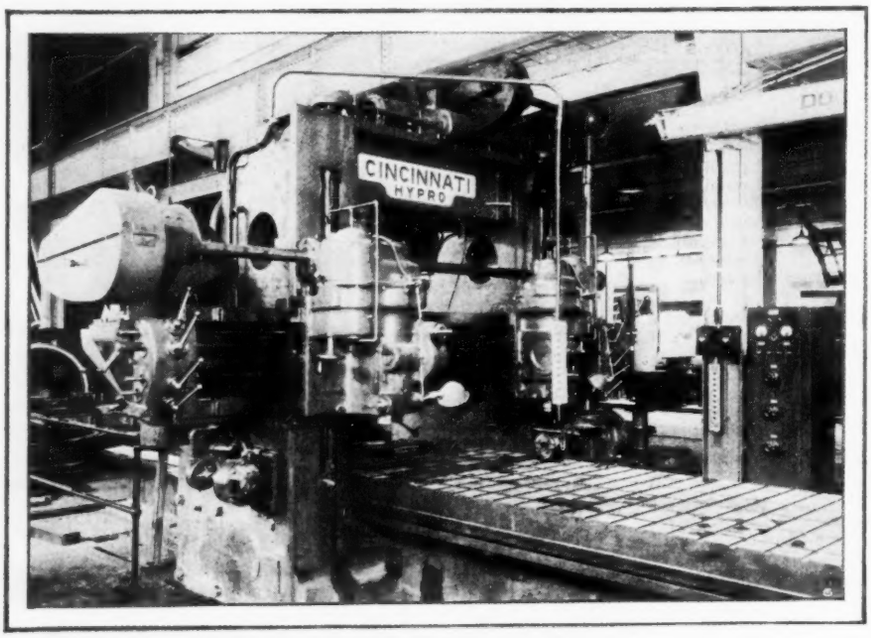
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

The QUITTING WHISTLE *BLOWS . . .*

. . . and workmen file out of shops everywhere, homeward bound for an evening of relaxation, forgetting the cares of the shop. Their day's work is finished.

But not so with many of the machines they have been operating. In many plants, three shifts a day keep machines going continuously. It takes good equipment to maintain this pace day after day.

Westinghouse motors, with their many desirable features; such as sealed sleeve bearings, dual protected windings, directed ventilation and radio frequency tested insulation, can be relied upon for dependable 24-hour-a-day performance. And Westinghouse control units, balanced to the motors, are equally dependable. Together, they represent the best motor drives you can buy.



Cincinnati Hypro, powered by Westinghouse Type SK Motors. There are more SK Motors in industry today than any other type of general purpose direct current motor

Be sure you get Westinghouse equipment on the next machines you buy. Call in a Westinghouse specialist when you have motor application problems to solve. Westinghouse motors and control will keep your machines operating three shifts a day.

Service, prompt and efficient, by a coast-to-coast chain of well-equipped shops

Westinghouse

T 31317

TUNE IN THE WESTINGHOUSE SALUTE OVER THE N. B. C. NATION-WIDE NETWORK EVERY TUESDAY EVENING.

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 12.00c, Conn., for copper

Sheets	
Yellow brass (high)	18.62½
Copper, hot rolled	21.75
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	23.50
Seamless copper	24.12½
Rods	
Yellow brass (high, full turnings)	16.87½
Naval brass	19.00
Anodes	
Copper, untrimmed	19.25
Wire	
Yellow brass (high)	19.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.00 to 7.25
Chicago	7.25 to 7.50
Cleveland	7.50 to 8.00
St. Louis	7.25 to 7.50
Heavy Yellow Brass	
New York	4.75 to 5.00
Heavy Copper and Wire	
New York	7.75 to 8.25
Boston	8.25 to 8.50
Chicago	8.50 to 8.75
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
Red Brass Borings	
New York	6.50 to 6.75
Yellow Brass Tubing	
Cleveland	4.50 to 5.00
Light Copper	
New York	7.00 to 7.25
Chicago	7.25 to 7.50
Cleveland	6.50 to 7.00
St. Louis	6.75
Light Brass	
Boston	4.00 to 4.25
Chicago	4.50 to 4.75
Cleveland	3.50 to 4.00
St. Louis	4.00 to 4.25
Zinc	
New York	2.00 to 2.25
Cleveland	1.50 to 1.75
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	8.00 to 9.50
Borings, Cleveland	5.00 to 5.50
Mixed cast, Cleveland	6.00 to 6.50
Mixed cast, Boston	5.50 to 6.00
Mixed cast, St. Louis	6.00

Secondary Metals

Remelt aluminum No. 12	13.50
Brass ingots, 85-5-5-5	11.00

Quicksilver Firmer

New York—Quicksilver is firmer at $107 to $108 a flask after a recent dip to $106. Business is moderate.

Metals

General Price Strength Gives Way to Uncertainty—Copper Demand Lags—Zinc Is Weaker

New York—Price strength has given way to uncertainty in the nonferrous metal market. This is particularly true of copper and zinc, where the absence of consumer interest after sharp rises has let the market down for half or more of the recent recovery. Lead, on the other hand, continues steady, and tin has fluctuated only narrowly.

Consumption of metals has tapered off a little through the autumn, and is lighter now than at any other time this year. Brass and copper mills are operating about half of capacity, except that some wire mills are on a higher basis. The outlook is for little change in tonnage over the remainder of this year. In the brass industry, tonnage improved in the autumn but by the end of the year it will show its seasonal decline again. The outlook in nonferrous metals for the new year remains vague.

Copper—While producers have continued to quote 12.00c, Connecticut, buyers have shown no interest, and this price is entirely nominal. Part of the custom smelters have let consumers know that they are open to bids at less than 12.00c, but as a general thing consumers have appeared to be uninterested, irrespective of price. A little custom smelter business was reported on Monday at 10.50c, and a little metal is reported to have been sold in the outside or resale market at 10.37½c, Connecticut. Outside metal consists of various lots sold by a few producers to dealers and speculators, mostly when the market was 9.50c. The export price continues at 12.30c, but foreign demand has been extremely light since the first two days of heavy business at this figure.

Zinc—Prices have sagged off gradually. Weakness is said to be due to pressure of a relatively small tonnage on the market, but in the absence of demand from consumers only a little pressure has been necessary to weaken the market. Some producers who have been willing to meet the lower prices have said they would not sell very far ahead at the current prices.

Tin—Consumer demand has been light and prices have moved slightly above or below 26.00c. Stocks in metal exchange warehouses here and in England continue to diminish, though shipments from several sources continue large. Deliveries to buyers continue of good size. It appears certain that much tin is going into invisible stock.

Lead—Sales have become quiet again after recent large buying. Prices have remained steady, however.

Aluminum—New business is small but prices continue steady.—*Daily Metal Trade.*

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.90

Coke By-Product Firm Sales Slightly Larger

New York—Coke by-product prices are unchanged and firm. Demand shows slight improvement in several divisions. Toluol is more active with more inquiry from the automobile field. Benzol for motor fuel is moving fairly well, but for industrial uses is dull. Phenol is moving in better volume, but mainly in small lots. Contracting for naphthalene is up to expectations. Sulphate of ammonia is unchanged.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Nov. 19	*11.25	12.12½	10.50	25.87½	26.25	5.10	4.95	4.30	22.90	7.15	35.00
Nov. 20	*11.25	12.12½	10.50	26.37½	26.75	5.10	4.95	4.25	22.90	7.15	35.00
Nov. 21	*11.25	12.12½	10.50	26.10	26.50	5.10	4.95	4.22½	22.90	7.15	35.00
Nov. 22	*11.25	12.12½	10.50	26.00	26.37½	5.10	4.95	4.20	22.90	7.15	35.00
Nov. 24	*11.25	12.12½	10.50	25.87½	26.17½	5.10	4.95	4.15	22.90	7.12½	35.00
Nov. 25	*11.25	12.12½	10.30	26.25	26.50	5.10	4.95	4.10	22.90	7.12½	35.00

*Average of producers' asking prices, including those of custom smelters.

Europe

British Steel Prices Easier—Tin Plate Price Control Relinquished—Soviet Buys Tools

London—(*By Radio*)—The British tin plate conference has relinquished control of prices. The industry as a whole has been working at 50 per cent or less and an easier tendency has been noted for some time. Quotations on several other steel products are being shaded by British makers. Steel prices on the Continent are firming but remain considerably below those in Britain.

Members of the continental steel entente will meet in Paris Dec. 5 to decide the fate of their association after Jan. 1. Total output for November and December has been limited to 4,500,000 tons, members going beyond their quotas to pay a fine of $4 per ton. The limit on output for November and December, 1929 was approximately 5,000,000 tons.

A Cleveland district company's bid for a bridge over the Zambezi river, South Africa, has been accepted, the contract worth £1,500,000 ($7,290,000). The Russian soviet has placed orders in Britain for £600,000 ($2,916,000) worth of machine tools.

Berlin reports further decline in steel prices is expected. Belgians are competing severely, and exports are restricted. Steel demand in Belgium is more active and prices are rising. The Belgians have sold substantial tonnages of structural shapes in Czecho-Slovakia. Domestic trade in France is quieter.

Foreign Orders Aid British Mills; Tin Plate Meets Canada's Tariff

Birmingham, Eng.—In connection with the construction of the steelworks to be opened at Pretoria by the South African Iron & Steel Industrial Corp. Ltd. two firms in the north of England have secured large contracts.

Dorman, Long & Co. Ltd., Middlesbrough, will be jointly responsible with a German firm, Demag A. G., Duisburg, for the construction of the steel smelting and rolling mill departments, and Ashmore, Benson, Pease & Co., Stockton-on-Tees, will supply the blast furnace plant.

The total value of these contracts, it is annonnced, will be about 2½ million pounds., including the coking and by-product plant placed with a London firm.

Stockton-on-Tees will also benefit by orders recently placed by the Great Western Railway Co. and the London & North Eastern Co. for improved gear in connection with the railway company's docks.

Dorman Long have also to supply about 2000 tons of steel to the Mersey Dock and Harbor board in connection with bridge work. Overseas demand for steel is limited and competition from the Continent continues severe, 2000 tons of steel billets and bars being unloaded in the Tees last week.

In the Midlands little business is being done in English steel and conditions become increasingly difficult, owing to pressure from the Continent. Some merchants selling foreign material are doing a fair trade and no doubt considerable tonnage of steel bars and billets is coming into the district. Small bars are being quoted at £5 2s 6d ($24.90), delivered, and No. 3 Belgian iron about the same price or possibly a little less. Billets are offered at £4 6s ($20.89), delivered.

Some furnaces are making more iron than they can dispose of in the present state of trade but apparently the situation is not serious enough to warrant further reduction in output.

Pig iron sales in Middlesbrough are limited to small lots for early delivery but production has been curtailed in that district to a point at which output is being absorbed. Nevertheless, there is severe competition from the Continent and reports are current that pig iron is being offered from Manchuria at prices well below the local figures.

Makers of finished iron strip in South Staffordshire are working four days a week though it is very difficult to secure sufficient orders to maintain employment. Only a few firms are making this material and by agreement the price has recently been reduced to £10 17s 6d ($52.84) as the minimum, representing a drop of 5s ($1.21). For small orders makers are still able to command £11 ($53.46) a ton. The market for this material is strictly limited, owing to its high price, as plenty of Continental material is available at much easier rates and many customers now prefer to buy steel strip.

Reports from Canada show that the government is increasing customs duties against British tin plate with a view to the establishment of a tin plate manufacturing plant in Western Ontario. Tin sheets hitherto employed in Canada have been mainly imported from Wales and Belgium.

The tin plate trade in South Wales is operating at about 50 per cent of capacity and active mills are maintaining a satisfactory rate, on an average about 1000 boxes a week. Some works are well booked until the end of the year but few contracts for delivery after that time can be found.

The price is maintained on the basis of 17s ($4.14) but works outside the conference and merchants are willing to cut this price for a good order.

French Market Feels General Price Pressure

Paris—The position of the iron and steel market in France is as favorable as possible so far as the domestic market is concerned, if one considers that the volume of inquiry is considerable and that a large tonnage of business is transacted.

A number of works with full order books maintain quotations at a firm level and refuse to make concessions. Other works manage to cut prices, in a disguised manner, notwithstanding the attempt made by the syndicates to enforce fixed minimum prices.

It is therefore feared that the recently-formed merchant steel syndicate, which limits its control to allocating a quota of orders to each member firm, will not be strong enough to maintain domestic prices at a profitable level. It also is to be noted that the price of merchant bars is equal to, and sometimes even lower than, the price fixed by the semifinished steel syndicate for billets, and ob-

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viously this is an impossible situation.

A survey shows that, while the position is satisfactory so far as occupation of the works is concerned, conditions are becoming critical so far as the price situation is concerned, especially in view of the fact that the cost of raw materials and overhead charges have not decreased proportionately.

Ore Piles up at Mines

On account of decrease in production in France and foreign countries, there is an accumulation of stocks of ore at the mines. Owing to the keen competition experienced from neighboring countries, the domestic syndicate for foundry iron has been dissolved, with the result that prices have suffered a sudden drop, and that, as a corollary, the Franco-Belgo-Luxemburg pig iron entente is broken up. The domestic arrangement in France relating to hematite pig iron still is in force.

Merchant bars in the domestic market now range from 530 to 540 francs ($20.70 to $21.10); this compares with the official price of 550 francs ($21.45) for 2-inch billets. Reinforced concrete bars now are offered at 490 francs ($19.10). Wire products are firm, and, in fact, a hardening of prices has been noticed following the announcement of the constitution of a wire products syndicate. Wire nails now are offered at 1300 francs ($50.80), as against the previous price of 1250 francs ($48.60).

Belgian Exports Larger

Brussels—Exports of pig iron from Belgium and Luxemburg in August gained a little over July. Exports of other iron and steel products were the lowest for the year to date. Comparisons follow in metric tons:

	— Imports —		— Exports —	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1927	31,760	28,000	11,350	388,000
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930				
Jan.	44,274	37,200	13,551	392,000
Feb.	38,121	32,700	7,320	295,600
Mar.	42,240	29,600	9,412	403,900
April	36,504	26,200	10,624	436,400
May	34,007	28,000	10,266	355,600
June	29,287	28,400	8,410	314,500
July	31,676	23,750	7,876	318,600
Aug.	26,996	20,900	8,196	282,400

German Trade Low

Berlin—Exports of pig iron and ferroalloys from Germany in September reached the lowest figure of the year. Exports of other iron and steel products, however, rebounded to the highest figure since May.

Imports of pig iron and ferroalloys into Germany in September were higher than in August. Imports of other iron and steed products were the lowest for the year to date, as compared with 91,539 tons in August. Comparisons follow, in metric tons:

	— Imports —		— Exports —	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	23,895	217,505	29,910	347,645
1928	25,535	174,250	24,585	394,575
1929	14,765	137,435	36,115	448,330
1930				
Jan.	22,004	105,127	33,153	488,245
Feb.	13,597	98,397	24,271	409,822
March	16,777	107,401	25,983	465,166
April	12,032	113,195	18,364	405,633
May	16,070	114,548	23,164	439,791
June	13,669	88,342	18,814	341,828
July	14,689	90,630	16,811	332,546
August	12,495	91,539	12,929	324,751
Sept.	14,022	79,017	12,652	355,485

French Coke Declines

Paris—Output of coke at French coal mines in September fell slightly from that of August. Comparative figures follow, in metric tons:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1929	397,435	453,720	39,070
1930			
Jan.	414,797	442,754	37,473
Feb.	392,950	403,887	15,905
March	443,909	385,742	11,779
April	419,348	450,437	13,371
May	426,327	386,422	21,605
June	416,992	386,359	24,333
July	427,121	352,388	40,460
August	422,526	369,741	39,947
Sept.	418,347	366,938	41,867

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 24	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$15.43	3 3 6*	$12.15	2 10 0	$12.15	2 10 0	$13.37	2 15 0
Basic-bessemer	15.92	3 5 6†	11.91	2 9 0	11.91	2 9 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.25	3 11 0	.....	.....	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$27.34	5 12 6	$17.01	3 10 0	$17.01	3 10 0	$16.52	3 8 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$32.08	6 12 0
Merchant bars	1.68c	7 15 0	.91c	4 3 0	.91c	4 3 0	.91c	4 2 6
Structural shapes	1.68c	7 15 0	.78c	3 12 6	.78c	3 12 6	.83c	3 15 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.05c	4 15 6	1.05c	4 15 6	1.02c	4 13 0
Sheets, black, 24 gage	1.90c	8 15 0	1.83c	8 6 3	1.83c	8 6 3	1.98c	9 0 0
Sheets, galvanized, 24 gage, corrugated	2.44c	11 5 0	2.35c	10 13 9	2.35c	10 13 9	2.31c	10 10 0
Bands and strips	2.17c	10 0 0	1.02c	4 12 6	1.02c	4 12 6	1.00c	4 11 0
Plain wire, base	2.06c	9 10 0	1.29c	5 17 6	1.29c	5 17 6	1.43c	6 10 0
Galvanized wire, base	3.04c	14 0 0	1.49c	6 15 0	1.49c	6 15 0	1.61c	7 6 0
Wire nails, base	2.39c	11 0 0	1.30c	5 18 0	1.30c	5 18 0	1.32c	6 0 0
Tin plate, base box 108 pounds	$ 4.13	0 17 0	.....	.....	.....	.....	$ 8.26	1 14 0

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43	3 3 6	$19.25	490(2)	$16.18	580	$19.79	83
Basic pig iron	15.80	3 5 0	20.63	525(1)	12.83	460	21.10	88.50
Furnace coke	3.16	0 13 0	6.60	168	5.30	190	5.13	21.50
Billets	27.95	5 15 0	21.62	550	17.02	610	28.01	117.50
Standard rails	1.79c	8 5 0	1.46c	810	1.61c	1,240	1.47c	136
Merchant bars	1.68c	7 15 0	.98c	545	.94c	725	1.48c	137
Shapes	1.84c	8 10 0	1.12c	620	.94c	725	1.45c	134
Plates, ship, bridge and tank	1.95c	9 0 0‡	1.37c	760	1.09c	840	1.65c	153
Sheets, black, 24 gage	1.90c	8 15 0	2.63c	1,460	2.41c	1,850	1.36c	126
Sheets, galvanized 24 gage, corrugated	2.52c	11 12 6	3.74c	2,075	2.73c	2,100	3.67c	340
Plain wire	2.06c	9 10 0	1.76c	975	2.15c	1,650	2.34c	217
Bands and Strips	2.17c	10 0 0	1.27c	705	1.43c	1,100	1.72c	159

•Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £12 5s 0d ($59.54) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

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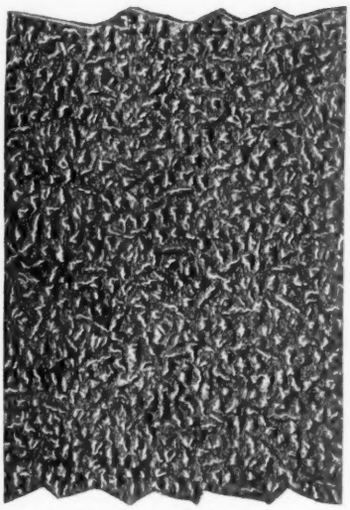
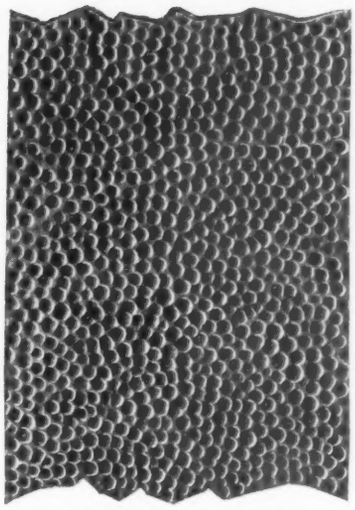


RELIEF PATTERN



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Machinery

WHETHER it be due to the holiday spirit or whether it be due to the fact that when more than half way through the woods one actually is on the way out of the woods, it certainly is true that better feelings prevail this week among machine tool builders and dealers. Substantial orders do not account for it, but active inquiries may be contributing factors. Budgets for 1931 are being completed but delayed action is expected on many pending unmistakable signs of general business revival. Several times of late mention has been made on this page of activities in engineering development. These become increasingly apparent.

New York—Following the recent flurry in demand for grinding equipment by the automobile industry, the machine tool business has slipped back into its rut. Some inquiry is noted for tools which are not likely to be placed before the turn of the year, but sales generally are limited to one or two units at a time and railroad buying has not improved to any extent. Prices appear to be holding, although some rather low figures appeared in connection with navy department bids last week. This navy business has not yet been formally closed. Technical school equipment for the City of New York will come up this week.

November with most dealers will show about the same volume as the previous month. There are a few exceptions, but where an increase is noted, the added volume includes a considerable amount of special equipment. Railroads and manufacturing companies are completing their equipment budgets for next year, but the actual placing of orders is likely to wait upon general business improvement in many cases.

Worcester, Mass.—Although actual business is no better, some optimism is developing among machine builders through the fact that large buyers, notably the General Electric Co., are beginning to release specifications. That is looked upon as some sign of progress beyond the condition of complete stagnation which has persisted lately. Prospects of an eight-cylinder Ford suggest possibilities. Grinders had a slight flurry last week. Chicago is at present the best market for New England manufacturers.

Pittsburgh—Activity in machine tools is dragging, orders and inquiry making the same unfavorable showing that has prevailed in the market for several months. Sellers are fairly busy figuring on new inquiry but inasmuch as a considerable portion of this is for 1931 budget estimating purposes this situation is not a true indication of probable purchases in the near future. There continues to be a lack of large lists among awards or pending business, the regular run of orders being made up almost entirely of individual tools.

Cleveland—Better feeling is apparent among machine tool builders and dealers in the Cleveland district, this apparently being due to recovery of active inquiry and to signs of activity in the automotive industry, rather than to any considerable number of orders. Such orders as there are cover an individual machine here and there, rather than for batteries of machines in any one place. Reports during the recent joint trade show of the National Standard Parts association and the Motor and Equipment association indicated that nearly a third of the member companies have done as much, or in some cases more, business this year as last. That report is substantiated by the activity of several such companies in and around Cleveland, who incidentally have been good customers of manufacturers of small tools during the depression.

Employment in the metalworking industries remains down, except in isolated cases, but civic action toward unemployment relief shows tangible results in lessening the number of idle men upon the streets. The spirit of co-operation toward the solution of social problems aggravated by unemployment is evinced by the generous support accorded to the Community Fund, both by corporations and by individuals.

Chicago—Despite the depressed state of the machine tool market, which holds forth little that is encouraging for the next three of four months, sentiment is buoyed occasionally by a few scattered inquiries. Five or six single item inquiries for shop tools have appeared in the last few days, but it is uncertain whether purchases will be completed before the turn of the year. The only inquiry that looks like a list is for three lathes, 20 to 24 inch, from a Chicago district steelworks, which recently purchased a few other items. This company is likely to follow with other inquiries in the next 60 to 90 days. It is probable Chicago board of education will call for new bids soon on the 18 lathes, drills and other equipment for the Austin High school, but the inquiry for equipment to fit out the nine shops of the Lane Technical High school is not expected to be out until next year. Inquiry is fair for used tools.

File Suit for Fulton Iron Works Receivership

Suit for receivership has been filed against the Fulton Iron Works Co., St. Louis, a $4,000,000 corporation specializing in manufacture of sugar machinery. The firm was founded in 1852.

Petition alleges that the Fulton company has assets of not more than $1,200,000, against total liabilities of $2,100,000, including contingent liability of $600,000. Mismanagement and payment of excessive salaries also are alleged.

E. W. Kopke, president, through the company's attorney, denied insolvency and mismanagement and declared the company would resist appointment of a receiver. A recent audit, he said, showed assets of $3,060,183, and liabilities of $836,061, exclusive of contingent liabilities of $1,371,000 in the form of guarantees of customers' notes.

"The principal problem," he said, "has been providing for continuance of contingent liabilities so that the collateral may be liquidated in orderly manner. Due to depression in the sugar business, a portion of these liabilities became due recently. Creditors holding this paper have indicated they would allow ample time for liquidation of collateral."

Volume of Hoist Orders Up but Value Is Down

New York—Members of the Electric Hoist Manufacturers Association report that the number of hoists ordered during October increased 0.943 per cent as compared with the previous month, and the value of such orders decreased 10.779 per cent as compared with September, 1930. Shipments were 6.7187 per cent smaller in October than they were in September, 1930.

Production of range boilers in October was 47,718 units compared to September's 44,597, according to 13 manufacturers reporting to the department of commerce.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

MERIDEN, CONN. — Fire recently damaged the old Parker clock shop building, causing damage of $30,000. Occupants include Acme Silver Co., Andrew Young & Sons, tool makers, and Federal Knife Co.

NEW LONDON, CONN.—Treasury department, Washington, will receive bids until Dec. 5 for traveling cranes and hoists to be installed in the group of buildings being erected here for the Coast Guard academy, as recently noted. J. A. Wetmore, treasury department, Washington, is supervising architect. (Noted Sept. 11.)

WALLINGFORD, CONN.—Connecticut Light & Power Co., Borough Electric Works, plans to build a transmission line, to include substations, from South Manchester. Plans are private. Cost is estimated at $85,000.

FRANKFORT, ME. — Mt. Waldo Granite Co., Mt. Waldo, Me., proposes to erect a 1-story cutting plant, 55 x 250 feet. Cost is estimated at $45,000. Plans are by Leo F. Caproni & Co., 1044 Chapel street, New Haven, Conn.

BOSTON—L. A. Anderson, 171 Charlesbank road, Newton, Boston, is in the market for a miller.

BOSTON—P. P. Plourde Refrigerator Co., 15 Glen street, Somerville, Boston, is inquiring for a tractor type sander, to be run by alternating current.

BOSTON—Ornamental iron and wire works of Sweet & Sibley Inc., 148 Sidney street, Cambridge, recently was damaged by fire, with loss estimated at $50,000.

WATERTOWN, MASS.—J. W. Greer Co., 119 Windsor street, Cambridge, Boston, advises that an experimental building and warehouse 40 x 100 feet, 2 stories, has been completed and that the new plant to be erected will be 60 x 360 feet. (Noted Nov. 20.)

FRANKLIN, N. H.—Public Service Co. of New Hampshire, Manchester, N. H., will double the capacity of its hydroelectric plant here.

BARRE, VT.—Rock of Ages Corp. will build a 1-story cutting plant, 65 x 260 feet. Leo F. Caproni & Co., 1044 Chapel street, New Haven, Conn., architects, will supervise construction. Cost is estimated at $75,000.

New York

BROOKLYN—Advance Metal Co. has been incorporated with $20,000 capital by M. Z. Bungard, 26 Court street, to deal in metals.

BROOKLYN—Metal Weather Strip Co. has been incorporated with $10,000 capital by Mayor & Rosenberg, 1860 Broadway, New York.

BROOKLYN—M. & S. Metal Products Co. has been incorporated with $25,000 capital by C. Entmacher, 949 Broadway, New York, to deal in refrigerators.

BUFFALO—Louis B. Harvey Co., 1441 Niagara street, whose incorporation recently was noted, will establish a plant for the manufacture of vegetable cutting machinery and parts. (Noted Oct. 9.)

ITHACA—Erie J. Miller & Co. have been incorporated by Cobb & Cobb to deal in engines.

LACKAWANNA—Monarch Steel Products Inc., recently incorporated, will build a plant for the manufacture of steel products. Structure 60 x 260 feet is planned for next year. E. B. Magee, 20 Linwood terrace, Buffalo, is vice president.

NEWARK—Newark Tool Service Co. has been incorporated with $100,000 capital by Palmer Bradner, attorney, 17 Washington street.

NEW YORK—Tungsten Widia Tool Corp. of America has been incorporated by L. Niden, 11 West Forty-second street, to deal in tools.

NEW YORK—Stevenson & Louis have been incorporated by S. G. Solomon, 200 Fifth avenue, to deal in machinery.

NEW YORK—Consolidated Bolt & Nut Co. of New York has been incorporated with $25,000 capital by R. Zablin,, 1440 Broadway, to deal in hardware.

NEW YORK—Manhattan Foundry & Model Co. Inc. has started operations at 560 West Twenty-sixth street, manufacturing brass, bronze and aluminum castings. P. A. Fortomaroff is president.

NEW YORK—Department of hospitals, municipal building, receives bids late in December for construction of a power plant at Harlem hospital, 58 West 137th street. Sloan & Robertson, 420 Lexington avenue, are architects. Estimated cost, $330,000.

MINEOLA—General Airplanes Corp. has transferred operations here from Buffalo and will go into production of cabin planes.

ROCHESTER—Weighing and laboratory equipment of Sarachen & Rosenthal Inc., 26 Scherer street, dealers in iron and metals, recently was damaged by fire.

SCHENECTADY—Refrigerator division of General Electric Corp., River road, plans to build a plant at a cost of about $40,000.

Pennsylvania

BADEN—Pennsylvania railroad will build a transshipment plant near here at a cost of about $350,000. Unit will handle about 1,000,000 tons of coal annually.

NEW CASTLE—Blair Strip Steel Co., G. D. Blair Jr. president, has awarded contract for the construction of a 1-story plant, 50 x 250 feet, to be built on Butler avenue extension, to A. W. Bauman, 306 East Winter street. New unit will replace damage done by fire, recently noted. (Noted Oct. 9.)

NORRISTOWN—Patco airport will erect a new hangar, 60 x 70 feet.

PHILADELPHIA — Reading Co., Reading terminal station, has awarded contract to Roydhouse-Arey Co., Drexel building, for the construction of a warehouse at Twentieth street, south of Hamilton street. Cost is estimated at $20,000.

PHILADELPHIA—Philadelphia Gas Works Co., 1401 Arch street, has let contract to the Frederick Havens Co., 845 North Nineteenth street, for the construction of a pumphouse, at Venango and Casper streets. Cost is estimated at $17,000.

PITTSBURGH—E. G. Lang, director of public works, city building, is receiving bids for the construction of a new pumping station. C. M. Reppert, city building, is city engineer. Approximate cost, $285,000.

New Jersey

MOORESTOWN—Burlington County Aero club proposes to build a hangar for ten planes. Unit will be 60 x 70 feet.

NEWARK—United Tool & Die Works Inc. has been incorporated with 2500 common shares by Skeffington, Walker & Corrigan, 24 Commerce street.

RED BANK — Overhead Door Products Corp. has been incorporated with $50,000 capital by Harry Klatsky, to manufacture hardware.

SOUTH RIVER—Seawood Corp., 16 West Sixty-first street, New York, proposes to build a plant here for the construction of yachts. Structure will be located at William street and the South river. Cost is estimated at $40,000.

Ohio

CINCINNATI—University of St. Xavier is considering construction of a trades building. Rev. J. H. Brockmann, care of the university, Victory boulevard and Dana avenue, is in charge. Cost is estimated at $350,000.

CINCINNATI—Buckeye Foundry Co., 2257 Buck street, manufacturer of sewer inlets and other metal products, is reported to have let contract to D. Meinken & Son, 2143 Barnard street, for a 1-story foundry, 120 x 280 feet, to be built on Bekman street.

CLEVELAND — Airspring Corp. of

America is a new company here, at 5370 St. Clair avenue, manufacturing air shock absorbers for automobiles. L. R. Gruss is president.

CLEVELAND—General Electric Co. will build a power house as a part of its development of a new site on Chardon road, recently noted. Power unit is to be 60 x 80 feet. Plans for the first plant unit, 320 x 370 feet, will be available soon. (Noted Sept. 11.)

COLUMBIANA—U. S. Standard Mfg. Co. has awarded contract for the construction of a 1-story plant at Railroad and Spruce streets. Structure will be 60 x 105 feet and will cost approximately $33,000. Company manufactures concrete block machinery.

DAYTON—Art Bronze Craft Co. has been incorporated by Frederick W. Powell, 1104 Miami Savings Bank building.

LIMA—Plant of the Lima Armature Works recently was practically destroyed by fire. Loss on building, owned by Ortha O. Barr, is estimated at $10,000. Loss on equipment is estimated at $40,000.

LONDON—Department of public welfare, Oak and Ninth streets, Columbus, O., H. H. Griswold director, will receive bids until Dec. 8 for two boilers and stokers to be installed here at the London prison farm.

TIFFIN—Carl S. Hertzler will operate a machine shop now being erected by Gage Construction Co. at 28 Hudson street. Small machine and manufacturing work will be undertaken. Structure will be 30 x 40 feet.

UHRICHSVILLE — Albert O. Price Mfg. Co., recently incorporated, will manufacture racks and display equipment. Albert O. Price is manager. Company has established headquarters on North Water street.

Indiana

BLOOMINGTON — Fluck Cut Stone Co. will build a $40,000 cutting plant. Structure will be 1-story, 50 x 150 feet. Abell-Howe Co., 20 North Wacker drive, Chicago, is engineer.

MICHIGAN CITY—Joseph W. Hays Corp., 1048 East Eighth street, is arranging for acquisition of land for construction of an addition, 36 x 66 feet, into which the foundry will be moved. Interior of the main plant will be rearranged. Company makes gages, boiler coverings, and special apparatus. Phillip Sprague is manager.

PLYMOUTH—Plant of the Plymouth Battery Co., West Garro street, was seriously damaged by fire recently. Unit will be rebuilt. Arthur O'Keefe is owner of the building.

ROCKVILLE — Indiana state sanitarium plans to build a power plant, shops, and other units here. Total cost of the project, approximately $1,500,000.

Michigan

DETOUR — Machine shop owned by T. L. Durocher & Co. recently was damaged considerably by fire.

DETROIT—Century Mfg. Co. has been incorporated with 25,000 no par shares by Herbert A. Alford, 6537 Hamilton avenue, to make plumbing supplies.

DETROIT — Robinson Mfg. Corp., 17128 Filer avenue, whose incorporation recently was noted, plans to operate a plant for the manufacture of brass, bronze and aluminum products. (Noted Oct. 23.)

DETROIT—Lead Or'Loy Metals Inc., 2648 East Fort street, whose incorporation recently was noted, plans to establish a plant for the production of lead gaskets, tools, metal stampings and other products. (Noted Oct. 16.)

IMLAY CITY—City officials are in contact with a manufacturer, reported to be Gratiot Foundry Co., who will open a foundry on Almont avenue, employing 25 men. Brass and bronze tablets and brass bushings are to be made.

JACKSON — Sparks-Withington Co. plans to build a plant addition for the manufacture of radio equipment and automotive parts. Approximate cost, $45,000.

THREE OAKS—Lenert Aircraft Co., Pentwater, Mich., may locate here, pending negotiations with local business men. Company is seeking site for an airport and a plant for the manufacture of planes.

Illinois

CHICAGO—Prest-O-Lite Co. Inc., 30 East Forty-second street, New York, is considering construction of a plant here, to cost about $100,000.

CHICAGO—Board of education,, 406 South State street, is planning a vocational training department in the proposed Steinmetz high school. Cost of the project is estimated at $2,000,000.

CHICAGO—Howell Machine Works Inc., 128 North Jefferson street, has been incorporated with $25,000 capital by Ralph D. Sheney, State Bank building, Evanston, Ill.

CHICAGO—Jones & Laughlin Steel Corp., 2250 West Forty-seventh street, has a building permit for construction of a warehouse, 102 x 494 feet, at a cost of about $64,000. Maher & McGrew, Evanston, Ill., are architects.

CHICAGO—Thermal Units Mfg. Co., 228 North LaSallee street, room 1922, has been incorporated by Leahy, Saunders & Walther, attorneys, National Bank of Commerce building, to manufacture and deal in heaters.

CHICAGO — Illinois Standard Mfg. Corp., 820 North Clark street, has been incorporated with 1000 no par shares by Urion, Drucker, Reichman & Boutell, 134 South La Salle street, to engage in an electrical business.

CHICAGO—Gene Mfg. Co., 1651 First National Bank building, whose incorporation recently was noted, advises that necessary equipment has been purchased but that additional machinery may be needed soon. Company manufactures household specialties. Permanent address is to be 1843 Ogden avenue. (Noted Nov. 13.)

GALESBURG—Standard Oil Co. of Indiana, Peoria, Ill., has let contract to R. Iben Contracting Co., Peoria, for a warehouse to be built on Knox street, here. Approximate cost, $100,000.

ROCK ISLAND—Augustana university, G. Andreen president, will build a 3-story science building at a cost of about $200,000. Plans are by Cervin & Stuhr, Safety building.

Southern States

BIRMINGHAM, ALA.—W. M. Smith & Co., 4601 First avenue north, is asking for figures on a milling machine, and a generator, 1000 kilowatts, 60-cycle, 3-phase, 2200 volts, operated at 150 pounds steam pressure.

MONTGOMERY, ALA.—Capt. M. A. McFadden, constructing quartermaster, Maxwell field, will receive bids until Dec. 12 for an operations building.

DOVER, DEL.—Marine Steel Corp. has been incorporated with 12,350 common shares by United States Corporation Co., to deal in iron and steel.

WILMINGTON, DEL. — Automatic Loader Corp. has been incorporated with $100,000 and 50,000 common shares by Corporation Trust Co. to deal in automatic truck loaders and tools.

WASHINGTON—A. F. Jorss Co., 315 Thirteenth street, will be required to move to a new location due to the government's building program in the vicinity of its present location. Company has filed plans for a 2-story shop and office building to be built at 1220 Twenty-fourth street, at a cost of $50,000. Unit will be 101 x 198 feet. Porter & Lockie are architects. Jorss company makes ornamental iron.

WASHINGTON—Bureau of supplies and accounts, navy department, receives bids Dec. 2 on motor-driven steel forming press, portable electric drills and grinders, carbon and high speed twist drills, engine lathe, motor drill, motor-driven nibbling machine, bench-driven, geared head, single spindle vertical lathes and adapter castings, and motor-driven heavy duty armature machine. Bureau also will receive bids Dec. 9 on automatic screw machines.

TAMPA, FLA.—Tampa Shipbuilding & Engineering Co., South Water street, proposes to build a new floating drydock and to install repair facilities. Plans are being prepared. W. T. Donnelly, 247 Park avenue, New York, is engineer. Work will be started about Jan. 1.

BALTIMORE—D. C. Elphinstone Inc., 120 South Calvert street, is in the market for three 10-ton steel guy derricks, 100-foot boom to 120-foot mast, two single-head steam or air-driven channelling machines, and three 7½ x 10 double-drum steam hoists.

BALTIMORE—City advises through Theodore R. McKeldin, secretary to Mayor William F. Broening, that airport now under construction will cost $4,000,000, and will be used for land and sea planes. Construction work is

under the direction of Charles F. Goob, chief engineer of Baltimore. (Noted Nov. 20.)

BURLINGTON, N. C.—Sykes Foundry & Machine Co., Maple avenue extension, plans to rebuild a portion of its machine shop recently damaged by fire, with loss of $25,000. A. E. Sykes is owner and A. H. Fogleman lessee. (Noted Oct. 30.)

ANDREWS, S. C.—Nantahala Co. is reported to be in the market for a 75-horsepower motor, 220 or 440 volts, 3-phase, 60-cycle, 900 to 600 revolutions per minute, with starter; one motor-driven centrifugal pump, 1000 gallons per minute capacity, with motor as above, and one motor-driven centrifugal pump, capacity of 125 gallons per minute, both pumps operating against a 25-foot head.

CHATTANOOGA, TENN.—Plant of the Mascot Stove Co. recently was damaged by fire, with loss amounting to several thousand dollars. Principal damage was confined to the mounting room and warehouse. J. F. James is president of the company, and O. T. Tindell general manager.

HAMPTON ROADS, VA.—Bureau of yards and docks, navy department, Washington, will receive bids Dec. 3 on specification 6170 for a steel tank and pumping unit.

RICHMOND, VA.—Chevrolet Motor Co., 3044 West Grand boulevard, Detroit, is reported to have leased a plant here subject to requirements of the building code, for the establishment of a branch plant for the assembly of truck bodies.

Missouri

POPLAR BLUFF—Board of public works plans to install a turbine. Estimated cost, $43,000.

ST. LOUIS—Chevrolet Motor Co., 3707 Union boulevard, is erecting a mechanical and repair shop, 60 x 320 feet.

Arkansas

BEEBE—Plant of the Arkansas Power & Light Co., Little Rock, Ark., recently was damaged by fire. Two generators, one large and several small motors were destroyed.

Oklahoma

CLEVELAND—City proposes to build a municipal light plant and is having plans prepared. Estimated cost, $75,000. Plans are private.

CUSHING—City is considering construction of a diesel engine plant. Election Dec. 2 will decide bond issue. G. Estey is engineer. Diesel unit of 2500 horsepower is planned.

NOWATA—City is having preliminary plans prepared for a municipal light plant, to cost about $100,000.

OKLAHOMA CITY—City purposes to build a maintenance shop. Election will determine authorization of $250,000 bonds to be used for construction.

OKLAHOMA CITY—Sherman Machine & Iron Works, 18 East Main street, is considering installation of a small galvanizing plant in connection with its works, and is inquiring for figures on necessary equipment.

OKMULGEE—C. A. Mechling, Masonic Temple building, Tulsa, Okla., has purchased the plant of the Deck Clamp Tank Co. and is considering improvements to prepare it for operation about Jan. 1.

SAPULPA—Unit Standard Lock Co. has been incorporated with $50,000 capital by H. R. Lorsch, who will be vice president and general manager. Company will manufacture padlocks.

Texas

DALLAS—Board of directors, chamber of commerce, will attempt to secure a $46,000 appropriation for improvements to Hensley airport, to include construction of a hangar.

LUBBOCK—Texas Technological college, W. T. Gaston business manager, has plans for the construction of a power plant addition, to include two 150-horsepower boilers, according to an advice from Wyatt C. Hedrick Inc., architect and engineer, First National Bank building, Ft. Worth, Tex. (Noted Nov. 13.)

MARBLE FALLS—B. C. Goeth is inquiring for pumping equipment for extensions and improvements to waterworks. Cost is estimated at $60,000.

SAN ANGELO—City is considering acquisition of land for establishment of an airport, and passage of a $75,000 bond issue for construction purposes.

TAYLOR—City commission plans the erection of a hangar at municipal airport, and field improvements. Estimated cost, $3000.

Wisconsin

BEAVER DAM—Fire recently damaged the foundry of the F. Rassmann Mfg. Co., Rowell street, with loss estimated at $9000. Unit is 60 x 125 feet and houses two cupolas, one of which was damaged beyond repair. Company manufactures barn equipment.

LA CROSSE—LaCrosse Refrigerator Co. is constructing a shop addition, 60 x 80 feet, to contain two large presses for production of its own stampings. Bonderizing equipment also will be installed.

MILWAUKEE—Milwaukee Flush Valve Co., 125 Reservoir avenue, is taking bids for the erection of a 1-story plant addition, 22 x 40 feet. Julius Judell is president.

MILWAUKEE—American Candy Co., 215 Broadway, will install electrical and mechanical equipment in its plant and rebuild its power plant. O. H. Henschel, 401 Commerce building, is architect.

MILWAUKEE — Federal Pressed Steel Corp., 50 Keefe avenue, is having plans prepared for a new power plant. O. H. Henschel, 401 Commerce building, is engineer. A stoker and boilers will be installed.

RACINE—Modine Mfg. Co. will start work soon on a plant addition which will cost $75,000. Company makes automobile, truck and industrial engine radiators and space heaters.

STEVENS POINT—Water department is having plans prepared for a 2-story shop and garage, 40 x 70 feet, to cost $25,000. (Noted July 31.)

WAUSAU—Wausau Motor Parts Co., Karl Mathis president, 125 West Washington street, recently noted as planning a shop addition, will postpone its construction until next spring. Unit will cost approximately $40,000. (Noted Sept. 25.)

Minnesota

MINNEAPOLIS—Plant of the Northwestern Steel & Iron Corp., 2943 Fourth street northeast, recently was damaged by fire. Principal damage was confined to a storage unit.

North Dakota

MOTT—North Dakota Power & Light Co., Bismarck, N. Dak., plans construction of a power plant addition here.

Iowa

CEDAR RAPIDS—Linn county auditor, court house, will award contract soon for the construction of a shop building. W. H. Behrens is county engineer.

Kansas

ABILENE—United Power & Light Corp. has awarded contract for a garage, 40 x 100 feet, and a machine shop, 40 x 48 feet. Murray & Cayton are architects. (Noted Aug. 28.)

GLASCO—Continental Construction Corp., Professional building, Kansas City, Mo., has awarded contract to George H. Siedhoff Construction Co., Broadview Hotel building, Wichita, Kans., for construction of a compressor station and auxiliary facilities here.

KANSAS CITY—Spake Investment Co., 334 Brotherhood block, has awarded contract to H. J. Scott, 1247 Grandview boulevard, for construction of a machine shop and garage, 50 x 60 feet.

Nebraska

COLERIDGE—Interstate Power Co., Dubuque, Iowa, proposes to build a power plant extension here and to provide improvements.

Colorado

DENVER—Standard Metal Products Co., 100 West Louisiana avenue, successor to Standard Steel Stamping Co., advises through M. G. Wright, secretary, that equipment needed for making cans or similar articles up to 18 x 30

inches, includes power squeezer, double seaming machine, beading and flanging machine, folding and seaming press, gang-slitter, power rolls, etc. Items may be new or used. Company also is in the market for a 10-foot press brake to handle 10-gage material or lighter, and a 10-foot power shear. (Noted Nov. 20.)

Montana

BUTTE—City council is asking bids for the construction of a hangar unit. Cost is estimated at $20,000.

Nevada

HAWTHORNE—Bureau of yards and docks, navy department, Washington, is receiving bids for cranes, hoists, conveyors and power equipment for the naval ammunition depot here.

Pacific Coast

ALAMEDA, CALIF.—Curtiss Wright Flying Service, Alameda airport, plans to build seaplane repair shops and other facilities at the yacht harbor recently completed at a cost of $180,000.

ALAMEDA, CALIF.—City will cooperate with the federal government in air depot project recently noted, and will cede tide lands for establishment of an air base. Reported cost of shop facilities, over $200,000. (Noted Oct. 2.)

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids on Dec. 16 for the following items: Motor-driven drum armature winding machine, with spare carbon brushes, on schedule 4631; motor-driven drill press, sliding head, with spare carbon brushes, on schedule 4632; motor-driven bench drill, approximately 12 inches, with spare carbon brushes, on schedule 4635. All items are to be delivered to the supply officer, navy yard, here.

OAKLAND, CALIF.—F. L. deSanno, 4337 East Tenth street, proposes to build a 1-story machine shop and brass foundry, 90 x 110 feet, at Peralta and Nineteenth streets. Cost is estimated at $40,000.

OAKLAND, CALIF.—Pacific Pipe Co., Twentieth and Cypress streets, has acquired 40,000 square feet adjoining its present site of five acres. M. Jacobs is president and P. J. Kramer is plant superintendent.

SAN FRANCISCO—Board of public works, S. J. Hester secretary, city hall, will receive bids Dec. 3 for contracts on a junior high school, to include mechanical equipment costing about $45,000. W. H. Crim Jr., 488 Pine street, is architect.

PORTLAND, OREG.—Dud Rankin-Rose City airport has completed field improvements and will construct a hangar unit.

LONGVIEW, WASH.—Equipment to be purchased by Lower Columbia Dairy association, Astoria, Oreg., A. E. Engbretson secretary, includes boilers, engines and pumps. Bids will be received about Jan. 1. Association will build a plant at Eleventh street and California way, here. Estimated cost, $80,000.

SEATTLE—Alaska Washington Airways will construct a floating hangar, 56 x 100 feet. Cost is estimated at $50,000.

Dominion of Canada

CALGARY, ALTA.—Bessemer Tile & Pipe Co. Ltd., Buffalo, has secured a site here and proposes to erect a plant for the manufacture of cast iron pipe, pipe fittings and water pipe up to 6-inch size.

MINTO, N. B.—New Brunswick Electric Power commission, 55 Canterbury street, St. John, N. B., will purchase equipment for a steam power plant to be erected here. United Engineers & Contractors of Canada, 1010 St. Catherine street west, Montreal, Que., will be in charge of construction. Cost is estimated at $800,000.

ALEXANDRIA, ONT.—Town will receive bids soon for pumps and motors for a proposed waterworks system. Estimated cost, $20,000.

COLBORNE, ONT.—Town will purchase pumps and equipment for proposed waterworks system. Approximate cost, $65,000.

ERIAU, ONT.—Pumping equipment will be purchased by Harwich township in connection with a reclamation project. Estimated cost, $100,000.

LINDSAY, ONT.—City proposes to erect a pumping station in connection with a sewage disposal plant. F. A. Dallyn, 71 King street west, Toronto, Ont., is engineer.

OSHAWA, ONT.—Coulter Mfg. Co., division of Coulter Copper & Brass Mfg. Co., 115 Sumach street, Toronto, Ont., will locate here.

OSHAWA, ONT.—C. H. Millard and associates are reported to plan a plant here for the manufacture of incubators and other products.

OTTAWA, ONT.—Department of public works, Hunter building, has started construction of a 3-story ore dressing and metallurgical laboratory on Booth street. Thomas Fuller is architect and Alexander Garvock, Regent Theater building, is general contractor. (Noted July 31.)

STRATFORD, ONT.—City council is considering installation of new pumps for the waterworks department. S. H. Doland is city clerk.

New Trade Publications

COLLAPSIBLE TAPS—In its bulletin CT the Rickert-Shafer Co., Erie, Pa., tells the story of its collapsible taps. Illustrations show the taps and data tables give full information.

ARBOR PRESSES—Edwin E. Bartlett Co., Nashua, N. H., manufacturer of Greenerd arbor presses, has issued catalog No. 36. It presents the full line of presses and accessories, with illustrations and data.

TAPS—Bulletins G-73 and G-74 of the Landis Machine Co. Inc., Waynesboro, Pa., are devoted to collapsible and solid adjustable taps and to receding chaser collapsible taps. Details are illustrated and tables of specifications and other data are included.

SELF-TAPPING SCREWS—A booklet on fastenings has been prepared by the Parker-Kalon Corp., 200 Varick street, New York, for distribution to executives in the metal industries. The illustrations show instances in which use of these self-tapping screws have given large savings over former methods of fastening metal parts, notably in the automotive industry.

CENTRIFUGAL PUMPS—Allis-Chalmers Mfg. Co., Milwaukee, in bulletin 1647 describes one type of its centrifugal pumping units. The pump and motor have been designed as a single unit rather than two units tied by a coupling. A single shaft prevents misalignment and consequent vibration and wear. Illustrations, diagrams, data tables and graphs supplement the text.

LUBRICATION—In the current number of its magazine, *Lubrication*, the Texas Co., New York, takes up the subject of developments in steel mill lubrication with emphasis on the automatic handling of lubricants as a means of power economy and safety. Illustrations include characteristic modern methods of applying lubricants to this class of machinery.

HEAT RESISTING ALLOY—Ohio Steel Foundry Co., Springfield, O., presents reasons for the use of its Fahrite heat-resisting alloys in a current bulletin. After description of the company's facilities for production of high-grade steel the various uses of this alloy are presented. Illustrations picture a large variety of castings for widely diverse uses. A chapter gives metallurgical properties of the alloy.

LATHES—A new lathe produced by the Monarch Machine Tool Co., Sidney, O., is the subject of a booklet recently issued by that company. It is an automatic form-turning lathe for production of die casting and other dies, spinning chucks, punches, mill rolls and other forms for which a thin master template can be made. Illustrations give closeup views of work in process, showing how the result is obtained.